

American Radiator Getting Set for Air-Conditioning Business— Beer Brings Celebration—Grunow in Baby Parade



The home weather manufacturing plants just announced by American Radiator & Standard Sanitary Corp. will be controlled from any part of the house with simple radio-like regulators similar to the one operated by Jeannette Galyon.



The American Radiator & Standard Sanitary Corp. "Dial of the Seasons," which will be exhibited at A Century of Progress exposition in Chicago. Stanley Tobin, formerly with Electric Refrigeration News and now of Brooke, Smith & French advertising agency, sent us this picture. He identified the blonde as "Ona Avrill, Chicago beauty," and the lovely brunette as "Grace Anderson of Hollywood." Don't try to kid us, Stan. The editors get around, and recognized the two Detroit girls on sight. "Ona Avrill," my eye! The blonde is Mary Thomas (TOWNSEND 6-9392—but better not try it), while the brunette is Jeannette Galyon (OREGON 9406—over our dead body!). Stan also writes that the old gentleman with the purser's cap is "Capt. Isaiah Olsen, famous weather prophet of the Great Lakes, whose predictions have been highly respected by fresh water sailors for 50 years"; but after that Ona Avrill stuff we have our doubts. It's probably the Brooke, Smith & French janitor. Who ever heard of a Swede named Isaiah? BULLETIN: At a late hour last night, the old "Cap'n" was identified as a workman from Detroit's Graphic Arts building!



John Halliday, playing opposite Constance Bennett in the Radio picture, "A Bed of Roses," keeps his portrayal of the modern business man true to life by taking time off to get a drink from a 1933 Frigidaire water cooler.



Carl Windel (right) of the Copeland Distributing Co., Springfield, Ohio, couldn't get delivery on beer-cooling equipment in time to meet his customer's demands, so he built one himself. The model which he is demonstrating here to Joe Zigler, sales manager of the Burton Range Co., has a glass front in the base.



Roberts Furniture Co., Grunow dealer in Brookville, Ind., was quick to seize upon a "baby parade" as a means of promoting the safety features of the Grunow refrigerator. The float pictured above drew considerable attention during the parade.



Charles S. Farrar of New Orleans proves himself an ace salesman by being the first member of any Frigidaire sales organization in the country to qualify for the Frigid Airman's Club, organization for crack salesmen of air-conditioning equipment. Don M. House, sales supervisor, is pinning on the badge of membership.



"Miss Germany" christens the all metal and marble Liquid Carbonic bar which is installed in Old Heidelberg Inn, to provide an oasis for thirsty visitors at the 1933 Century of Progress Exposition, soon to open in Chicago. Prominent German-Americans were on hand for the christening.



This photograph, taken in the early hours of the day on which the sale of beer became legalized in Pennsylvania, shows how members of the Trilling & Montague Co., Norge Philadelphia distributor and officials of Norge Corp. celebrated the return of the foaming beverage.

REFRIGERATION NEWS

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS.

VOL. 9, No. 4, SERIAL NO. 218
ISSUED EVERY WEEKCopyright, 1933, by
Business News Pub. Co.

DETROIT, MICHIGAN, MAY 24, 1933

Entered as second-class
matter Aug. 1, 1927THREE DOLLARS PER YEAR
TEN CENTS PER COPY

NEMA TO CALL ALL-INDUSTRY CONFERENCE

NEW DeLaVERGNE SYSTEM UTILIZES REVERSED CYCLE

Air Conditioner Can Be Used as Heat Pump, Is Self-Contained

PHILADELPHIA—De La Vergne Engine Co., sales agent for the Baldwin-Southwark Corp., is introducing a new cabinet-type air conditioner which provides summer cooling as well as heating in winter by use of the reversed refrigeration cycle, according to an announcement from H. C. Grubbs, sales manager on air-conditioning equipment.

The new air conditioner is self-contained in that its sealed air-cooled refrigeration compressor, condenser, evaporator, fans, and filter are all housed inside the 56x22x43-in. cabinet. The cabinet is installed under a window, or with some connection to the outside, so that 1000 cu. ft. of air per minute can be drawn in to cool the compressor and to introduce fresh air into the system. Heat and moisture extracted from inside air in the summer is discharged to the outside through a second air duct.

Chief feature of the new air conditioner is its ability to be reversed in cycle so that the refrigeration machine can be used as a heat pump.

KELVINATOR BURNER PRODUCTION STARTS

DETROIT, May 24.—Featured by a new type of variable flame and hydraulic oil burner, the new Kelvinator oil burner for home heating went into production today at Kelvinator Corp.

Kelvinator's decision to enter the oil burner market was based on the belief that both the production and sale of this type of equipment will do much to smooth out the seasonal sales and production curves which attend an exclusive refrigeration operation.

Present plans call for distribution of the new burner largely through Kelvinator's existing sales channels. For the first year, sales will be

GENERAL MOTORS BUYS SUNLIGHT ELECTRIC CO.

WARREN, Ohio—General Motors Corp., in a deal involving \$1,000,000, has purchased Sunlight Electric Co. of this city, manufacturer of fractional horsepower motors for refrigerators, washing machines, and other household appliances, according to John B. Estabrook, president and treasurer of the Sunlight company.

After the sale has been consummated June 1, the Warren plant is to be operated as a subsidiary of Delco Products Co. of Dayton.

Ventilating Men Open Convention June 22

DETROIT—Tentative program for the American Society of Heating and Ventilating Engineers semi-annual meeting to be held June 22 through 24 at the Hotel Statler here has been announced by association headquarters.

Dinner and council meeting will precede the meeting Wednesday evening, June 21. Thursday morning, after registration, the first regular session

EDWARD HUGHES JOINS NORGE CORP.

DETROIT—Edward Hughes, formerly production manager of Cope-land Products, Inc., Mt. Clemens, Mich., has been appointed executive engineer of Norge Corp., Detroit.

Frigidaire Designs 2 Coolers for Bottled Beer

DAYTON—Two new coolers for bottled beverages were announced Monday by the beer-cooling equipment division of Frigidaire Corp. The new beer-bottle coolers augment Frigidaire's line of draft-bottle coolers.

The units are designed for use in restaurants, hotels, clubs, drug stores, filling stations, newsstands, and all places in which bottled beverages of any kind, beer or carbonated, are dispensed.

The smaller unit has a capacity for 78 12-oz. bottles, and the larger a capacity for 110 12-oz. bottles. They are finished in Indian bronze with side panels of decorated, pressed composition board.

The coil boxes are of galvanized steel. Bottles rest on a removable grid. Coil and compressor are designed as a drop-in unit and may be removed easily when desired. The compressor is of the standard twin-cylinder Frigidaire design.

LEONARD ADDS UNIT SELLING FOR \$122.50

DETROIT—Bringing its line of household electric refrigerators to 12 models, Leonard Refrigerator Co., Detroit, has added a new model, designated as the L-531.

The new model, explains R. I. Petrie, general sales manager, was created to fill a demand for a cabinet in the low-price group, to fit in between the L-425, lowest-priced model in the line, and the L-641, until recently the second lowest.

Delivered price of the new model in Zone 1, in which the factory is located, is \$122.50.

Exterior finish is white lacquer on (Concluded on Page 4, Column 5)

UTILITIES WILL DISCUSS AIR-CONDITIONING LOAD

NEW YORK CITY—Program for the convention of the Edison Electric Institute which will be held in Chicago June 5 to 8, has been announced by officials of the association.

The sessions will follow a general plan of activity comprised of the formal presentation of a principal topic by the speaker, followed by a discussion which will be led by selected members of the audience.

Promotional programs, load building in air conditioning, distribution costs, and specific examples of what has been done by certain companies will be featured subjects of discussion.

The convention will open at 10 a. m. Monday morning, June 5, with address (Concluded on Page 2, Column 1)

SEEGER ADDS 350 MEN AND DOUBLES PRODUCTION

ST. PAUL, Minn.—Working force of the Seeger Refrigerator Co. here has just been doubled with the hiring of 350 new men. Regular output of the plant is contracted for up until Aug. 1, according to reports, and 24-hour operation has been ordered. A good portion of the extra production is for beer-cooling cabinets.

Frigidaire Branch Has Flat-Rate Service Plan

DETROIT—Local branch of Frigidaire Sales Corp. has instituted a plan whereby customers are offered service on their refrigerator at a flat rate of \$6 a year for the three years following the one-year period of free service guaranteed by the factory.

This plan applies to both the standard and super-series lines of Frigidaire refrigerators. It covers any type of service which may be necessary.

The offer also stipulates that if after four years, the rotary compressor on the standard models needs to be replaced, a new compressor will be installed for a charge of \$10, and the new compressor will carry a one-year guarantee.

Message to the Industry

American Industry is about to enter an entirely new phase of its development. A partnership between government and industry is in the making. A program of industry control, more revolutionary in conception and more comprehensive in scope than anything ever before undertaken in time of peace, seems certain of adoption.

The National Industrial Recovery bill, now in the final stages of revision by Congress, is designed primarily to solve the problem of unemployment. It aims to break the depression by increasing the purchasing power of the public. It proposes to accomplish that purpose swiftly and surely. Rights of individuals and corporations are to be subordinated to public interest.

The effects of the plan upon the established order of business, methods of merchandising, systems of accounting and cost finding, and a host of other matters of practice and policy are so involved and so far reaching as to be almost beyond comprehension. No one knows how the plan will work out and what will be the ultimate consequences of its application.

From one viewpoint, the program appears to be the answer to the prayers of industrial executives who have fought long and hard (and often ineffectively) against the evils of price cutting, sub-standard goods, unfair competition, and racketeering. But in return for these benefits industry will be called upon to deliver

LATE BULLETIN

The refrigeration division of Nema, recognizing its responsibility to the industry as a whole, has unanimously adopted a resolution authorizing a meeting to be called after passage of the pending National Industrial Recovery Act to which all manufacturers engaged in the refrigeration industry will be invited for discussion of the most effective means of functioning in cooperation under the provisions of the law.

In the meantime suggestions regarding constructive action will be appreciated. Such suggestions should be addressed to Mr. Louis Ruthenburg, 2638 Book Tower, Detroit.

G. M. Johnston, Chairman
Refrigeration Division of Nema.

its independence, its freedom of thought and action, and a large measure of control of its own affairs.

In brief, the proposed law will put all industry under the control of a dictator. Sub-dictators will be set up in authority over major product divisions. Provision is made for a large measure of cooperative self determination of the rules and regulations governing a related group of manufacturers. Insofar as the members of a group may be able to agree on codes and procedure in conformity with the general plan, the group may have the privilege of deciding upon details. But in the absence of agreement upon suggested proposals, or if the ideas of manufacturers are in conflict with the aims and objectives of the law, then the government member of the "partnership" decides and can enforce his decisions.

In the actual operation of the law, the trade association is slated for an important part in the picture. When such organizations are established and truly representative of an industry, the government will recognize them as the official medium for contact with the individual manufacturing companies. A plan for licensing concerns not having an association membership is contemplated. The rules adopted in conference with the association, however, become binding and enforceable upon companies outside of the organization.

With this brief and very sketchy outline of the situation it is evident that the electric refrigeration industry is vitally concerned. The legislation, about to be enacted, includes an answer to nearly every problem of competitive relations which has been

(Concluded on Page 2, Column 4)

MANUFACTURERS MEET TO STUDY INDUSTRIAL BILL

Executives Prepare For Probable Control By Dictator

By F. M. Cockrell

HOT SPRINGS, Va., May 23.—(Special Wire to ELECTRIC REFRIGERATION NEWS)—The National Industrial Recovery bill and its probable effect upon the electric refrigeration industry have been the absorbing topics of discussion by manufacturing executives during the past two days of sessions of the National Electrical Manufacturers Association here. Opinions differ widely as to the benefits of the proposed law but the general attitude is to accept the plan for government control as inevitable and to proceed promptly to adjust operating methods according to the provisions of the law.

The intent and purposes of the government, and the probable practical applications of the bill as now drawn, were explained to the members on Monday by Gerard Swope, president of General Electric Co., J. S. Tritie, vice president of Westinghouse Electric & Mfg. Co., and Francis E. Neagle, legal counsel for the association.

At the meeting of the refrigeration division on Tuesday morning, the new problems which will confront the electric refrigeration industry when the dictatorship becomes effective were

(Concluded on Page 4, Column 5)

NEW ROOM COOLERS BROUGHT OUT BY G. E.

SCHENECTADY, N. Y.—General Electric Co. has announced development of self-contained room coolers for summer air conditioning, portable, floor, and wall types; room coolers operating from remote compressors; a complete air-conditioning unit for producing conditioned air within a room the year around; and a central air-conditioning system which will be installed to fit the requirements of individual premises. This equipment will be sold by the air-conditioning department of the company.

The functions of the room cooler will be to cool the air, reduce its humidity to a comfortable level, and circulate this cooled, dehumidified air through the room.

The portable unit will be mounted on rubber wheels, allowing it to be moved from one room to another. It will be equipped with a rubber hose line 15 ft. long, as to be connected to a faucet, and 8 ft. of electric cord to be plugged into a standard wall or floor socket. This unit will be 43 in. in length, 13 in. in width, and 33 in. in height. It will have a weight of 500 lbs.

The non-portable room coolers will do the same work but will not be self-contained. The refrigeration compressors in this case will be installed remote from the room in which the

(Concluded on Page 19, Column 2)

KELVINATOR BOXES COME BY SPECIAL DAILY TRAIN

DETROIT—With Kelvinator's production schedule boosted to full capacity to meet an unprecedented flood of orders, demands for fast freight service between Detroit and Grand Rapids where the Kelvinator cabinet plants are located has grown to such an extent that the Pere Marquette railway has put into service a daily "Kelvinator Special" which runs between the two cities on a fast schedule.

With right of way over all other freight, this special Pere Marquette-Kelvinator train leaves Grand Rapids in the morning and delivers a train load of cabinets to the Plymouth road factory where final assembly is made.

UTILITIES TO DISCUSS PROMOTIONAL PLANS

(Concluded from Page 1, Column 2)
dresses by President George B. Cortelyou and other officers, after which Alex Dow, president of the Detroit Edison Co., will address the group.

"Distribution Costs" is the title of a paper to be presented by Norman R. Gibson, vice president and chief engineer of the Buffalo, Niagara & Eastern Power Corp. The discussion on this subject will be led by P. M. Downing, vice president, Pacific Gas & Electric Co.; H. W. Fuller, vice president, Byllesby Engineering & Management Corp.; H. B. Gear, assistant to vice president of the Commonwealth Edison Co.

E. W. Lloyd, vice president, Commonwealth Edison Co., will speak on "The Fair and the Electrical Exhibit."

The Tuesday session will be opened with S. M. Dean, chief assistant superintendent of electrical system, Detroit Edison Co., presenting a paper "Outages, Service Standards, and Investments." H. W. Eales, chief electrical engineer of Byllesby Engineering & Management Corp., and B. L. Huff of Commonwealth & Southern Corp. will lead the discussion on this subject.

"Trends and Developments in Power Stations" will be presented by F. S. Clark, consulting mechanical engineer of Stone & Webster Engineering Corp.

J. E. Davidson, president of the Nebraska Power Co. and chairman of the National Electric Refrigeration Bureau, will speak on "Evaluating Our National Coordinated Promotional Programs." The discussion of this subject will be led by Preston S. Arkwright, president of the Georgia Power Co.

The Wednesday session will be opened with C. E. Michel, merchandising manager of Union Electric Light & Power Co., St. Louis, presenting the subject, "Load Building

Opportunities in the Air-Conditioning Field."

Industrial applications in this field will be taken under consideration in a discussion led by R. H. Tillman of Consolidated Gas, Electric Light & Power Co. The discussion on commercial and residential applications will be led by Davis M. DeBard of the Engineers Public Service Co.

Other subjects which will be presented at the Wednesday morning session are "Lighting Fields to Explore for Profit," by M. E. Skinner, assistant vice president, Niagara Hudson Power Corp.; and "Commercialism and Competition—Today and Tomorrow," by George E. Whitwell, vice president in charge of sales, Philadelphia Electric Co.

"Taxation" by W. C. Mullendore, vice president, Southern California Edison Co., Ltd.; and "Trend in Rates" by F. A. Newton, Commonwealth & Southern Corp., will be the principal subjects at the final session Thursday morning.

An address by Bernard F. Weadock, vice president and executive secretary of the institute, will close the official business of the convention.

HEATING ENGINEERS WILL OPEN CONVENTION JUNE 22

(Concluded from Page 1, Column 1)

is expected to be called at 9:30 a. m. A greeting to visiting delegates, and response by W. T. Jones of Boston, president of the society, will officially open the convention.

Initial address is to be a three-fold discussion by M. K. Fahnestock, E. L. Broderick, and A. P. Kratz of the University of Illinois, on "Tests of Convector in a Warm Wall Booth."

R. N. Trane of La Crosse, Wis., chairman of the committee on the code for testing and rating convection heaters, will report on the work of this group. He is to be followed by S. R. Lewis of Chicago, dealing with

"Testing and Rating of Air Cleaning Devices Used for General Ventilation Work." The air cleaner code will be explained by H. C. Murphy, Louisville, Ky.

Second general session on Friday, June 23, according to present plans, will be opened by L. A. Cherry of Buffalo, describing "A Pipe Sizer for Hot Water Heating." L. E. Davies' discussion of "Measurement of Air Flow Through Grilles" is scheduled next on the program, followed by a presentation of "Temperature Gradient Observations on a Large Heated Space," by G. L. Larson, D. W. Nelson (both of the University of Wisconsin), and O. C. Cromer.

The Friday meeting will close with a discussion of "Indices of Air Change and Air Distribution" by F. C. Houghton and J. L. Blackshaw, members from Pittsburgh.

Three speeches are planned for Saturday's meeting, F. B. Rowley opening with "Thermal Conductivities of Different Grades of Lumber." "Physiologic Changes During Exposure to Ionized Air" by C. P. Yaglou of the Harvard School of Public Health, A. D. Brandt, and L. C. Benjamin; and "Carbon Monoxide Distribution in Relation to the Heating and Ventilating of a One-Floor Garage" by F. C. Houghton and Paul McDermott, will take up the remaining time.

A varied entertainment program is scheduled for afternoons and evenings during the meeting. Two golf tournaments will be run off Thursday and Friday afternoons, with a trip through Detroit's industrial plants for those not playing.

The semi-annual banquet and dance is to be held at Grosse Pointe Yacht club Friday evening, June 23. Thursday evening may be spent at Meadowbrook Country club, where a buffet supper, music, and dancing will be provided.

Ladies are to be entertained Thursday noon by a trip to Henry Ford's Greenfield Village and luncheon at Dearborn Inn.

Message to the Industry

(Concluded from Page 1, Column 3)

injected into the business since its beginning. Whether the solutions of these problems will be pleasing to the industry remains to be seen. The important fact is that the machinery for complete control of competitive business is being erected and, in all probability, will be set in motion very soon.

Communications published in this and previous issues of ELECTRIC REFRIGERATION NEWS indicate the existence of some opinion opposed to the acceptance of the present Nema division and favoring the formation of a new industry association.

Regardless of the merits or demerits of the National Electrical Manufacturers Association as a suitable body for cooperative activity in the electric refrigeration field, regardless of any opinion as to the advantages and disadvantages of the present refrigeration division of "Nema" as a spokesman for the industry at Washington, the fact remains that the association has already performed a valuable service to the entire industry by being established and ready to contact the government and take an active part in the preliminary development of the law. It is also true that approximately 75 per cent of the industry volume is now represented by membership in the association.

In the present emergency, therefore, the NEWS makes this definite proposal:

(1) That the officers of the refrigeration division of the National Electrical Manufacturers Association (Nema) call a meeting in Detroit as early as is practicable after the enactment of the law.

(2) That all manufacturers of mechanical refrigerators be invited to attend.

(3) That the Nema group give to the other manufacturers, at this meeting, the full benefit of the advance knowledge and expert legal interpretation of the law acquired by the association as a result of official contact with the government.

(4) That the manufacturers not now represented in the Nema group be given an opportunity to make direct inquiry into the present activity of Nema with a view to free determination as to its qualifications and fitness to represent the industry.

(5) That any executive not in sympathy with the present setup be given freedom to present his objections to the Nema organization and to propose any alternative plan for organizing the industry.

ELECTRIC REFRIGERATION NEWS believes that the matter of a suitable association for the industry is now one of vital importance and that a decision should be made without delay. It is imperative that the industry's representation at Washington be fully qualified and deserving of the entire confidence and support of all constructive forces in the field.

F. M. COCKRELL,
Hot Springs, Va., May 23, 1933.

Evans Urges Early Meeting Of Industry in Detroit

Western Union Night Letter

Philadelphia, Pa.

May 18, 1933, 5:34 p. m.

George Taubeneck, Editor
Electric Refrigeration News
Detroit, Mich.

In view of almost certain enactment of National Recovery Bill early in June, I urge that you call a preliminary conference of one representative of every electric refrigerator manufacturer in Detroit, June 1, to draw plans for formation of an association to function immediately under purview of the act and along lines defined by Senator Wagner in statement in this morning's papers. Present partial affiliation of industry with NEMA inadequate and unrepresentative. There must be a new association with the industry constituted to do equal justice to all manufacturers and their employees. Prompt action is in my opinion vital and imperative to welfare of all engaged in the industry. Please wire if you will assume this responsibility as an impartial coordinator within the industry as several of the smaller manufacturers demand disinterested leadership in defining and limiting the purposes and powers of such an association. If you cannot act other avenues have been considered and will be explored.

Merchant and Evans Co.,
THOMAS EVANS, President.

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| <input checked="" type="checkbox"/> A name favorably known in millions of homes for over three generations. | <input checked="" type="checkbox"/> A compact line of fast moving models. |
| <input checked="" type="checkbox"/> Longest manufacturing experience in the industry—52 years of growth. | <input checked="" type="checkbox"/> Plug-in package merchandise, ready to operate. |
| <input checked="" type="checkbox"/> Finest manufacturing facilities. | <input checked="" type="checkbox"/> Prices that are keenly competitive. |
| <input checked="" type="checkbox"/> Unquestioned financial strength and stability. | <input checked="" type="checkbox"/> Values outstanding on any basis of comparison. |
| <input checked="" type="checkbox"/> A quality product—quiet, economical, trouble-free. | <input checked="" type="checkbox"/> Liberal dealer discounts. |
| <input checked="" type="checkbox"/> Unmatched sales advantages. | <input checked="" type="checkbox"/> Aggressive advertising and merchandising support. |
| <input checked="" type="checkbox"/> An unequalled array of convenience features that appeal instantly to buyers. | <input checked="" type="checkbox"/> Fair, sensible policies; a satisfactory profit from every sale. |

These are the basic points upon which Leonard has built one of the strongest dealer organizations in the entire refrigeration industry. Write or wire the factory for details of this attractive franchise.

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10 BEAUTIFUL MODELS
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PRICES \$ **97⁰⁰**
START AT **97⁰⁰**
Installed, plus freight

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(370)

NEW FRIGIDAIRES TAKE THE COUNTRY BY STORM

Buying Wave Rolls Up New Sales Records

FACTORY PRODUCTION REACHES NEW PEAK AS ORDERS ROLL INTO DAYTON; THOUSANDS OF MEN PUT TO WORK

Never before, in the history of the refrigeration industry, has a new refrigerator met with such an overwhelming public acceptance as the New Frigidaire. The sweeping endorsement by our own selling organization and by the public has more than justified the many months' work by the Frigidaire sales department in securing new sales ideas from the field and planning and building these sales ideas into the new products.

The enthusiastic public acceptance and the buying wave which followed the announcement of the New Frigidaires is the big news of the day. It has attracted the attention of the country—and it has literally swept us off our feet.

We have been forced to increase our production tremendously, and add hundreds of new men to the thousands now at work in Frigidaire's enormous plants here in Dayton.

Everything possible is being done to meet the demands of thousands of new buyers, and meet the ever-increasing buying wave.

Orders are rolling in from every section of the country; from cities, from towns, and villages. 1933 has been clearly and definitely established as a Frigidaire year.

Showrooms everywhere have been crowded. Public interest is at a new peak. The public has been quick to recognize the outstanding value offered by the new Frigidaires. People who had not considered the purchase of an electric refrigerator this year, are now eager to enjoy the new conveniences and economy of the New Frigidaire. Old prospects who have been holding off have come into showrooms, have signed up readily for New Frigidaires. And thousands, ready to buy an electric refrigerator this year, have made the New Frigidaire their choice.



• Crowds jammed Frigidaire showrooms in Roanoke, Virginia, when the H. C. Baker Company put on its show. Newspaper announcements and radio broadcasts daily called attention to the new Frigidaires and to the show. 1585 people registered at the show, and these names were immediately followed up by salesmen.



• Commonwealth Edison Company, Chicago, conducted a refrigeration show. The Frigidaire exhibit created much attention. A feminine artist drew pictures a la Russell Patterson, on the porcelain cabinets. Sixty sales were made during the week's show and over a thousand leads obtained.



• A typical evening in the Euclid Avenue Frigidaire showroom in Cleveland. And those who come in to see the new Frigidaires are not just curiosity-seekers, but interested prospects; people who are ready to buy and who are buying.

• GIVEN OFFICIAL RECEPTION—The New Frigidaires were officially received with much enthusiasm at Orlando, Florida, by Mayor S. Y. Way (extreme left) and all of the members of the Utility Commission. The reception was held in the dealership of Claude H. Wolfe (extreme right).



THE NEW FRIGIDAIRES ARE IN TUNE WITH THE TIMES

Industrial Recovery Bill Would Give President Control Over Industry

The provisions of the National Industrial Recovery bill give the President the power, by agreement with industries, to regulate production and prices in industry, minimum wages, hours of labor, and other problems.

The bill, which was introduced jointly by Senator Wagner (Dem.) of New York and Representative Doughton (Dem.) of North Carolina May 17, also embraces a \$3,300,000 public works bond issue and a \$700,000,000 tax program.

The bill will be called up in the House of Representatives Thursday, May 25, and will probably be voted on the following day, as debate on the bill has been limited to six hours.

Of interest to the electric refrigeration industry is the fact that at the last minute the House Ways and Means Committee, at the request of the administration, decided to include a provision continuing the miscellaneous excise tax (including the 5 per cent tax on household electric refrigerators) from their expiration date July 1, 1934, to July 1, 1935.

However, the way will be left open for a showdown on a general manufacturers' sales tax as a means of raising the necessary revenue, and a motion is expected to be made to recommit the bill to substitute the general sales tax for the miscellaneous excise tax.

The regulatory or control measures will be free from prosecution for violation of the anti-trust laws. Declared as an emergency measure, its term is to be for two years only.

Upon application by one or more trade or industrial associations or groups, the President is authorized to approve codes of fair competition for industries, if he finds that such groups impose no inequitable restrictions on

membership and are truly representative of such industries and if he finds that such codes do not discriminate against small enterprises.

After approval by the President, the provisions of the code are to be the standards of fair competition of the industry involved and any violation will be subject to punishment by fine.

Upon his own initiative or upon complaint submitted to abuses inimical to the public interest and contrary to the declared policy of the legislation, the President may impose a code of fair competition upon an industry.

In order to compel acceptance of and adherence to a code of fair competition of a trade agreement, the President is empowered to license business enterprises. After public proclamation of such licensing no person is to be permitted to carry on any business in or affecting interstate commerce in the trade or industry specified, unless he is duly licensed.

The bill for control of industry follows in full:

A bill (S. 1712) to encourage national industrial recovery, to foster fair competition, and to provide for the construction of certain useful public works, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled.

TITLE I—Industrial Recovery—Declaration of Policy

SEC. 1. A national emergency productive of widespread unemployment and disorganization of industry, which burdens interstate commerce, affects the public welfare, and undermines the standards of living of the American people, is hereby declared to exist. It is hereby declared to be the policy of Congress to remove obstructions to the free flow of interstate commerce which tend to diminish the amount thereof; and to promote the or-

ganization of industry for the purpose of cooperative action among trade groups, to induce and maintain united action of labor and management under adequate governmental sanctions and supervision, to eliminate unfair competitive practices, to reduce and relieve unemployment, to improve standards of labor, and otherwise to rehabilitate industry and to conserve natural resources.

Administrative Agencies

SEC. 2. (a) To effectuate the policy of this title, the President is hereby authorized to establish such agencies, to accept and utilize such voluntary and uncompensated services, to appoint, without regard to the provisions of the civil service laws, such officers and employees, and to utilize such Federal officers and employees, and, with the consent of the State, such State and local officers and employees, as he may find necessary, to prescribe their authorities, duties, responsibilities, and tenure, and, without regard to the Classification Act of 1923, as amended, to fix the compensation of any officers and employees so appointed.

(b) The President may delegate any of his functions and powers under this title to such officers, agents, and employees as he may designate or appoint, and may establish an industrial planning and research agency to aid in carrying out his functions under this title.

(c) This title shall cease to be in effect and any agencies established hereunder shall cease to exist at the expiration of two years after the date of enactment of this act, or sooner if the President shall by proclamation declare that the emergency recognized by section 1 has ended.

Codes of Fair Competition

SEC. 3. (a) Upon the application to the President by one or more trade or industrial associations or groups, the President may approve a code or codes of fair competition for the trade or industry or subdivision thereof, represented by the applicant or applicants, if the President finds (1) that such associations or groups impose no inequitable restrictions on admission to membership therein and are truly representative of such trades or industries or subdivisions thereof, and (2) that such code or codes are not designed to promote monopolies or to eliminate or oppress small enterprises and will not operate to discriminate against

them, and will tend to effectuate the policy of this title. The President may as a condition of his approval of any such code, impose such conditions (including requirements for the making of reports and the keeping of accounts) for the protection of consumers, competitors, employees, and others, and in furtherance of the public interest, and may provide such exceptions to and exemptions from the provisions of such code, as the President in his discretion deems necessary to effectuate the policy herein declared.

(b) After the President shall have approved any such code, the provisions of such code shall be the standards of fair competition for such trade or industry or subdivision thereof. Any violation of such standards in any transaction in or affecting interstate commerce shall be deemed an unfair method of competition in commerce within the meaning of the Federal Trade Commission Act, as amended. A violation of any provision of any such code shall be a misdemeanor and upon conviction thereof an offender shall be fined not more than \$500 for each offense.

(c) The several district courts of the United States are hereby invested with jurisdiction to prevent and restrain violations of any code of fair competition approved under this title; and it shall be the duty of the several district attorneys of the United States, in their respective districts, under the direction of the Attorney General, to institute proceedings in equity to prevent and restrain such violations.

(d) Upon his own motion, or if complaint is made to the President that abuses inimical to the public interest and contrary to the policy herein declared are prevalent in any trade or industry or subdivision thereof, and if no code of fair competition therefor has heretofore been approved by the President, the President, after such public notice and hearing as he shall specify, may prescribe and approve a code of fair competition for such trade or industry or subdivision thereof, which shall have the same effect as a code of fair competition approved by the President under subsection (a) of this section.

Agreements and Licenses

SEC. 4. (a) The President is authorized to enter into agreements with, and to approve voluntary agreements between and among, persons engaged in a trade or industry, labor organizations, and trade or industrial organizations, associations, or groups, relating to any trade or industry, if in his judgment such agreements will aid in effectuating the policy of this title with respect to transactions in or affecting interstate commerce, and will be consistent with the requirements of clause (2) of subsection (a) of section 3 for a code of fair competition.

(b) Whenever the President, after such public notice and hearing as he shall specify, shall find it essential to license business enterprises in order to make effective a code of fair competition or an agreement under this title or otherwise to effectuate the policy of this title, and shall publicly so announce, no person shall, after a date fixed in such announcement, engage in or carry on any business, in or affecting interstate commerce, specified in such announcement, unless he shall have first obtained a license issued pursuant to such regulations as the President shall prescribe. The President may suspend or revoke any such license after due notice and opportunity for hearing, for violations of the terms or conditions thereof. Any order of the President suspending or revoking any such license shall be final if in accordance with law. Any person who, without such a license or in violation of any condition thereof, carries on any such business for which a license is so required, shall, upon conviction thereof, be fined not more than \$500, or imprisoned not more than six months, or both, and each day such violation continues shall be deemed a separate offense.

SEC. 5. While this title is in effect and for 60 days thereafter, any code, agreement, or license approved, prescribed, or issued and in effect under this title, and any action complying with the provisions thereof taken during such period, shall be exempt from the provisions of the anti-trust laws of the United States.

Limitations Upon Application of Title

SEC. 6. (a) No trade or industrial association or group shall be eligible to receive the benefit of the provisions of this title until it files with the President a statement containing such information relating to the activities of the association or groups as the President shall by regulation prescribe.

(b) The President is authorized to prescribe rules and regulations designed to insure that any organization availing itself of the benefits of this title shall be truly representative of the trade or industry or subdivision thereof represented by such organization. Any organization violating any such rule or regulation shall cease to be entitled to the benefits of this title.

(c) Upon the request of the President, the Federal Trade Commission shall make such investigations as may be necessary to enable the President to carry out the provisions of this title, and for such purposes the Commission shall have all the powers vested in it with respect to investigations under the Federal Trade Commission Act, as amended.

SEC. 7. (a) Every code of fair competition, agreement, and license approved, prescribed, or issued under this title shall contain the following conditions: (1) That employees shall have the right to organize and bargain collectively through representatives of their own choosing; (2) that no employee and no one seeking employment to join any organization or to refrain from joining a labor organization of his own choosing; and (3) that employers shall comply with the maximum hours of labor, minimum rates of pay, and other working conditions, approved or prescribed by the President.

(b) The President shall, so far as practicable, afford every opportunity to employers and employees in any trade or industry or subdivision thereof with respect to which the conditions referred to in clauses (1) and (2) of subsection (a) prevail, to establish by mutual agreement, the standards as to the maximum hours of labor, minimum rates of pay, and such other working conditions as may be neces-

sary in such trade or industry or subdivision thereof to effectuate the policy of this title; and the standards established in such agreements, when approved by the President, shall have the same effect as a code of fair competition, approved by the President under subsection (a) of section 3.

(c) Where no such mutual agreement has been approved by the President, he may investigate the labor practices, policies, wages, hours of labor, and working conditions in such trade or industry or subdivision thereof; and upon the basis of such investigations, and after such hearings as the President finds advisable, he is authorized to prescribe a limited code of fair competition fixing such maximum hours of labor, minimum rates of pay, and other working conditions in the trade or industry or subdivision thereof investigated as he finds to be necessary to effectuate the policy of this title, which shall have the same effect as a code of fair competition approved by the President under subsection (a) of section 3. The President may differentiate according to experience and skill of the employees affected and according to the locality of employment; but no attempt shall be made to introduce any classification according to the nature of the work involved which might tend to set a maximum as well as a minimum wage.

(d) As used in this title, the term "person" includes any individual, partnership, association, trust, or corporation.

Application of Agricultural Adjustment Act

SEC. 8. This title shall not be construed to repeal or modify any of the provisions of the Act entitled "An Act to relieve the existing national economic emergency by increasing agricultural purchasing power, to raise revenue for extraordinary expenses incurred by reason of such emergency, to provide emergency relief with respect to agricultural indebtedness, to provide for the orderly liquidation of joint-stock land banks, and for other purposes," approved May 12, 1933.

Rules and Regulations

SEC. 9. (a) The President is authorized to prescribe such rules and regulations as may be necessary to carry out the purposes of this title, and fees for licenses and for filing codes of fair competition, and any violation of any such rule or regulation shall be punishable by fine of not to exceed \$500 or imprisonment for not to exceed six months, or both.

(b) The President may from time to time cancel or modify any order, approval, license, rule, or regulation issued under this title; and each agreement, code of fair competition, or license approved, prescribed, or issued under this title shall contain an express provision to that effect.

SEC. 201. . . (d) After the expiration of two years after the date of the enactment of this Act, or sooner if the President shall, by proclamation, declare that the emergency recognized by section 1 has ended, the President shall not make any further loans or grants or enter upon any new construction under this title, and any agencies established hereunder shall cease to exist and any of their remaining functions shall be transferred to such departments of the Government as the President shall designate: Provided, That he may issue funds to a borrower under this title prior to Jan. 23, 1939, under the terms of any agreement entered into with such borrower prior to the date of termination, under this section, of the power of the President to make loans.

MANUFACTURERS MEET TO STUDY INDUSTRIAL BILL

(Concluded from Page 1, Column 5)

carefully considered. Special attention was given to matter of relations with producers not represented in the Nema membership. It was the consensus of opinion that an invitation should be extended to all eligible companies to join the association. Those who attended the refrigeration division session were: G. M. Johnston, chairman of the division and president of Universal Cooler Corp., Detroit; Louis Ruthenburg, manager of the refrigeration division headquarters in Detroit; George W. Mason, president, and Henry W. Burritt, vice president of Kelvinator Corp., Detroit; T. K. Quinn, vice president of General Electric Co., New York; Howard E. Blood, president of Norge Corp., Detroit; W. F. Armstrong, assistant to the president of Frigidaire Corp., Dayton; Lewis Crosley of Crosley Radio Corp., Cincinnati; N. G. Symonds, vice president and R. E. Imhoff, sales manager of merchandise department, S. M. Kintner, vice president, Westinghouse Electric & Mfg. Co., Pittsburgh; and F. M. Cockrell, publisher of ELECTRIC REFRIGERATION NEWS.

LEONARD ADDS 5-CU. FT. MODEL PRICED AT \$122.50

(Concluded from Page 1, Column 2)

rust-proof steel, while the interior is porcelain on Armco iron. Food storage space amounts to 5.24 cu. ft., while the shelf area is 10.41 sq. ft. Insulation 2½ in. thick is used. Overall dimensions are 51-7/16 in. high, 25½ in. deep, and 28-7/16 in. wide. Three freezing trays are used, giving the box an ice capacity of 63 cubes, or 5.1 lbs., at one freezing. Standard equipment found in the new model consists of the Chillometer (with Steady-Kold Defroster), glass defrosting pan, table top, broom-room legs, Sanitrays, all-porcelain cooling unit, bar-type shelves, special black door trim, black rubber door gasket, and one-piece porcelain food compartment with rounded corners.

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Prices not guaranteed for any definite period

THE GIBSON FACTORY IS RUNNING AT FULL CAPACITY 24 HOURS A DAY 7 DAYS A WEEK

Every day, in steadily increasing numbers, people are turning to Gibson refrigeration. And why not? It offers matchless beauty, all the newest conveniences, hermetically sealed, twin cylinder power, new operating economy, quality and dependability backed by over 50 years experience. Astounding low prices!

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Please send complete details regarding your dealer franchise.

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MAIL THIS COUPON NOW!

**MORE PROFIT FOR YOU...
MORE SATISFACTION TO CUSTOMERS, IN SELLING**



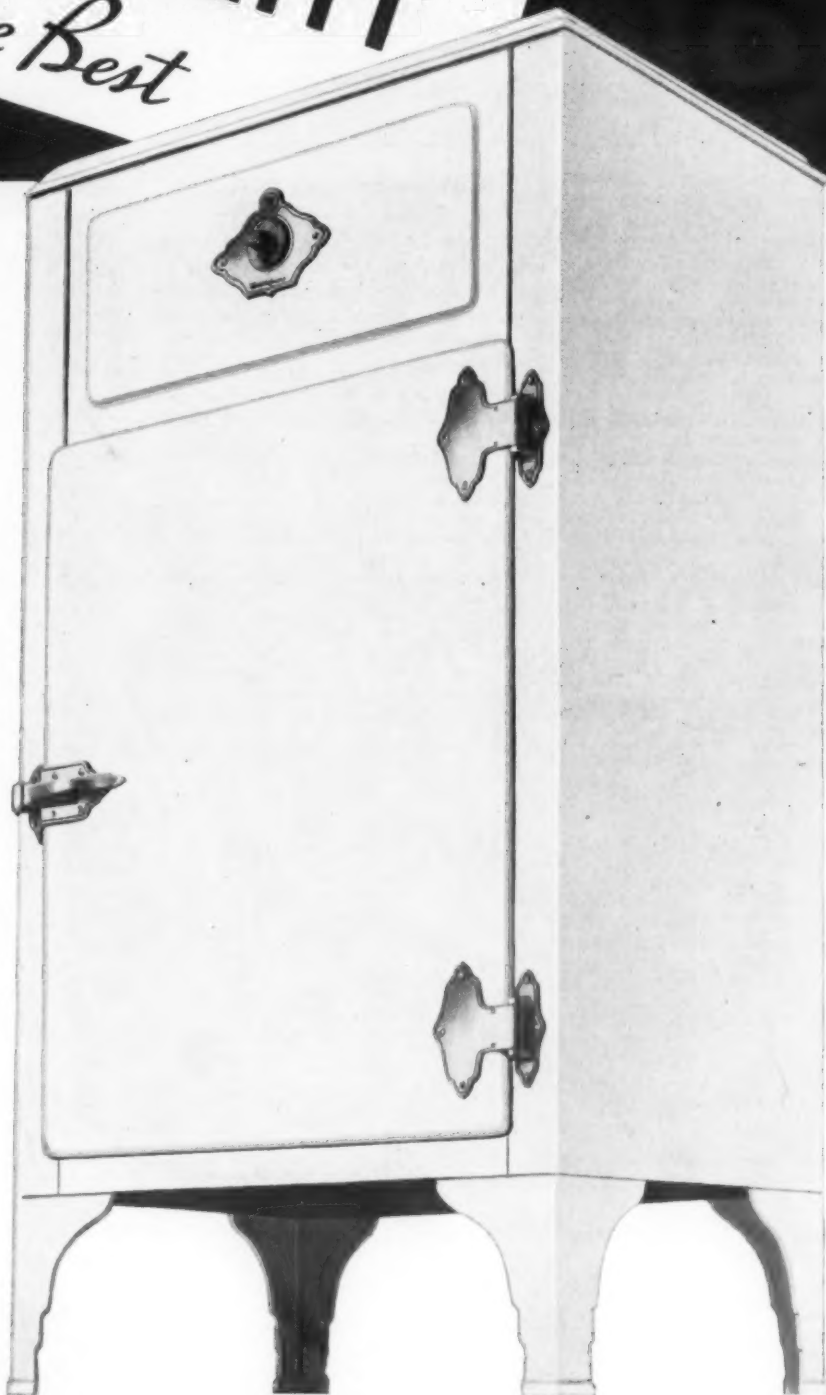
● It's no cinch . . . to explain to a refrigerator prospect that various models made by the same manufacturer differ fundamentally in construction and quality. It's no cinch . . . to talk up the advantages of one of these "same family" refrigerators without talking down the other. Take this tip from thousands of refrigerator salesmen who find themselves in such a position this year.

It's so much easier, so much more convincing to have **ONE LINE**, complete . . . **ONE QUALITY**, the best. *That's exactly what Westinghouse offers . . . ONE LINE*, complete in eleven models . . . **ONE QUALITY**, the best that can be built!

This is no mere "talking point." It is a very definite policy . . . one that has contributed more than ever to almost incredible Westinghouse refrigeration sales increases this year. The simple, plain-spoken assurance of the same quality in the smallest as well as the largest Westinghouse model has alone offset the whole gamut of competitive "talking points" . . . *not once but time and again!*

And, of course, Westinghouse quality assurance means a refined and perfected **HERMETICALLY-SEALED** mechanism with exclusive *dual-automatic* control . . . with all-steel cabinet construction, lifetime insulation, liberal guarantee and *every* important convenience of modern refrigeration.

Westinghouse has studied the refrigerator dealer's problems. *Your problems.* That's why Westinghouse merchandising and advertising as well as its product are keyed so harmoniously with modern demands. That's why the Westinghouse Refrigerator Franchise has become so great a **PROFIT ASSET**. It will pay you to learn complete details. Write today. Westinghouse Electric & Manufacturing Company, Refrigeration Division, Mansfield, Ohio.



Westinghouse



Dual-automatic **REFRIGERATOR** *Hermetically-sealed*

BY GEORGE F. TAUBENECK ---

Low-Priced Projects

Although current projects point the way to further developments in low-cost, mass producing housing, there is still much to be done in such matters as financing, reduction of building time, construction set-up, etc.

Other more experimental plans have resulted in some lower-priced houses and housing ideas.

The Elliott Plywood House Corp., in Aberdeen, Wash., according to *Business Week* produces a three-room cottage for \$385. Wood panels make up the walls, which are put together with a waterproof glue. Sizes up to six rooms are available, and two men can erect the house in two days.

The Allied Construction Industries Standardized House Conference in Los Angeles presented a plan for a house constructed principally of fabricated steel and concrete with 1,000 square feet of floor space, to sell for \$2,000 including the land.

The steel is made up in room size units with door frames, window frames, piping, and conduits put in place at the factory. Exterior walls are of reinforced concrete plates; interior plates are of gypsum and concrete masonry.

American Rolling Mill Co. and Ferro Enamel Corp. both have plans for low-cost steel dwellings, examples of which have already been built in Cleveland, others to be shown at the World's Fair. With welding, these houses can be constructed in a few days time.

Paul H. Hayward, writing in *Nation's Business* for December, 1932, makes the following statement and prophecy:

"Small, all-steel cottages are actually available at below \$1,000, the \$5,000 all-steel house is promised, and several steel homes in higher price ranges have been completed."

Germany has already started small metal house production. A company has been organized to make and sell small houses in 10 different designs, all combinations of the same units.

These are copper on the outside and steel within, with insulation between, and the building of one of these houses is a matter of but two or three days of assembly. The idea can be carried out in any metal, in wood, and in any other material suitable for manufacture.

It might be pointed out here that there seems to be more future for the metals in mass production of homes than for conventional materials, due to their adaptability to fabrication, and ease of handling.

General Houses, Inc.

When one considers the future of the pre-fabricated house, the clearest idea of what may be expected in a few years is obtained by a study of the plans contemplated by General Houses, Inc.

This is an association already organized to produce low-priced homes by mass production methods, consisting of the following companies: Pullman Car & Mfg. Corp., American Radiator & Standard Sanitary, Container Corp. of America, Concrete Engineering Co., General Electric Co., Pittsburgh Plate Glass, Curtis Companies, Inc., and Thomas A. Edison, Inc.

One of the most notable features of the General Houses plan is that the association has ideas about solving problems of financing and merchandising in addition to supplying the house itself.

"General Houses, Inc.," says *Fortune Magazine*, "proposes to be what its name implies, a group of great manufacturers to be associated as producers of essential materials with a central, coordinating, and merchandising company which supplies, in addition to its executive services, national advertising, architectural and engineering direction, legal counsel, credit facilities, and such expert advice as is required in regard to landscape architecture, group planning, domestic science, interior decoration, color, and the like."

Houses of various sizes, prices, and plans will be produced. They will vary as experience dictates, but at present they are planned after the ideas of Howard T. Fisher of Chicago, architect and engineer. His plan is for a pressed steel house, sample of which will be exhibited at the coming World's Fair.

Activities are to be divided among companies making up the association roster. The Pullman Co., backed by its experience in metal wall construction, will probably handle the pressed steel wall and structural panels. Concrete Engineering Co. and Edison Cement Corp. will cooperate on foundation problems.

Insulation, wall surfaces, ceilings, and partitions are being studied by the Container Corp. of America, "the country's largest manufacturer of

cartons and paper-base shipping containers, and a rapidly growing factor in the insulation field."

Pittsburgh Plate Glass Co. will handle the glass work, while the Curtis Companies, Inc., will deal with interior wooden trim, cases, and other millwork. General Electric Co. will take care of electric wiring and appliances. Heating and plumbing devices will be installed by American Radiator & Standard Sanitary Corp.

Dealers of the automobile type will probably be used in distribution, rather than old-fashioned real estate channels. Each dealer will maintain his own assembling crew or will engage his own contractors. National advertising by the central company, including erection of sample houses in conspicuous locations, will aid materially in selling the product.

A proposed advertisement, under the heading, "We will deliver this five-room house to you this very week!" is included in *Fortune's* survey. Body of the advertisement reads as follows:

"This announces a revolution in the marketing of houses! Now you can come to our showroom and pick out your house just as you do your automobile. In a surprisingly short time you move into it. Everything is in place . . . lighting, plumbing, heating, refrigeration. Not one thing must you add!"

"The cost to you . . . that is even more amazing! Volume production makes it possible to sell these modern, pre-fabricated houses in a variety of designs and sizes for about one-half of what it would cost you, or anyone, to build. All financing, even to furniture and landscaping if you wish, is handled by a single company. You know to the penny how much your home will cost per month or year—complete."

Homes of the Future

This is the third of a short series of articles on new developments in house construction — developments which may open up vast new opportunities to specialty selling organizations.

Final study of this subject is scheduled for the next issue of the News.

"Thank engineering skill and mass production for this revolutionary achievement. General Houses, Inc., with the cooperation of leading manufacturing companies, now follows the volume production methods of the automobile industry to save you money on the designing, production, erection, equipping, and financing of houses. These houses, delivered and erected on your lot, are the first efficient, pre-fabricated low-cost houses ever perfected. General Houses, Inc., Chicago, Ill."

A sample plan is included in the advertisement, together with a picture of the finished house. The reader is invited to "write for free booklet or call at our nearest showroom."

Financing of the houses will be handled by distributors through an arrangement similar to that now used on electric appliances, etc. An affiliated company, like the Commercial Investment Trust of New York, will handle the paper.

Price of standard small models with heater and refrigerator, but without land or furnishings is estimated to run, in the early stages of production, around \$3,500. This is expected to be reduced as capacity production is reached.

The houses will be sold, without down payment, if the family owns the lot, for \$30 per month over a 15-year period. Financing cost will be ½ of 1 per cent, interest 6 per cent. If the house and lot are sold together, a down payment equivalent to the value of the land will be required. Simplification of the financing set-up including disposing of the first and second mortgage distinction is anticipated.

Fortune believes Mr. Fisher's house to be a large improvement over other pre-fabricated houses introduced to date. It is to be constructed on the principle of the all-steel house built by the American Rolling Mills Co.—that is, with steel panel walls used as the structural members to hold up the floors, rather than utilization of skyscraper methods of steel framing and cantilever construction.

Walls, roof, and floor panels are flanged pressed steel units backed by rabbeted insulating panels which provide a one-inch air space through which electric conduits may be run. The individual units are easily bolted together.

"Units are of two types, vertical and horizontal. The vertical panels are interchangeable standard units, four feet wide and nine feet (or one story)

high. They are variously designed to serve as blank wall, window, and door. The horizontal panels, or 'Battledock' construction, provide floor and roof, the structural roof being completely watertight and requiring neither roofing material nor flashing. And all panels are load-bearing and self-supporting, provided the horizontal span is no greater than that usual in residential construction."

Outstanding and unique features of Mr. Fisher's plan are that the houses are to be only one story in height, and that he has studied layouts of various successfully designed apartment houses to insure compactness and convenience in interior arrangements.

The whole structure of the house is notable for lightness, strength, compactness of layout, possibility of variation in design, and simplicity of architecture.

Assembly is not only considered easy, but rapid. Concrete for the foundation (there being no basement) can be poured and ready for use in 24 hours. Panels forming walls and roof can be erected by a crew of four men and a crane in one day. All incidentals, such as heating plant and millwork, are put in place before the roof goes on.

With the shell thus completed in two days, nothing remains to be done to the exterior except possibly a finish coat of paint, and application of aluminum foil or paint to the roof for purposes of deflecting the sun's rays.

"Interior construction will be completed in two days more. Interior partitions of sound-absorbent, four-foot panels arrive at the job ready finished, and interior wooden trim and millwork are delivered with doors fitted to frames and all hardware in place so that no nailing or marring of the ready-finished surfaces is required. Floors are laid in laminated wooden squares with insulation attached to the underside."

There are many things worth examining in the plan of the interior. In a typical Fisher house of five rooms (living room, two bedrooms, kitchen, optional room, and bath) the dining room is reduced to a dining space in the kitchen. The main living room thus is increased in size. Plenty of window space is provided, insuring cross ventilation in all rooms.

The kitchen and bathroom are both pre-fabricated units, with built-in appliances. The two rooms share a common wall which carries all piping and much of the wiring—a large saving over the usual house plan. And both are isolated from the living room.

The heater works under thermostat control summer and winter, and heats the water supply as well as the house. It is placed in the bathroom, as is the laundry equipment.

Plenty of closet and cupboard space is planned for, along with an exterior storage room for trunks and garden equipment.

The optional room in this plan may be used for recreation, dining room, or extra bedroom.

Fortune gives an interesting sidelight on this house. The formula for it on drafting boards of General Houses, Inc., is K_2H_2O . Explanation of the symbols: K indicates the basic housing type, 2 a subdivision of that type, H means there is an entrance through a hall, 4 shows 2 bedrooms with twin beds in each, O indicates an optional room.

The company will supply fireplaces at a small additional expense, as well as a simple inexpensive line of furniture.

Community Planning

According to Lewis Mumford, writing in the *Architectural Record*, "the cost of money, the rent of land, the cost of utilities, including streets, mains, sewers, and sewage disposal plants are among the major items on the bill."

He believes that even by cutting the cost of the house shell in half, the total cost would only be lowered about 10 per cent. The New York State Housing and Regional Planning Commission, he points out, has shown that the lowering of the interest rate by 1 per cent would do as much.

Some community planners believe that house groups will be one way of cutting dwelling costs.

Housing schemes of this kind take into consideration buying a large tract of land, improving it, building pleasing house groups, and renting to the consumer at a cost commensurate with his income.

Mass production can cut the cost of a house group as well as of a house. Rental would include payment for utilities, taxes, and other costs—which the best plans claim can be reduced by group handling. Chief advantage of the house-in-rows over the apartment is that the former will have ground in front and in back for the exclusive use of each renter.

"The variation in cost between the free-standing and interior row house of identical living area," states the report by the Committee on Comparative Costs and Use-Values of Dwellings to the President's Conference on Home Building and Home Ownership, "is from 100 per cent to 76.4 per cent where land is taken at only 10 cents per square foot."

On 40-cent land the difference is further increased so that the row house will cost only 74 per cent as much as the free-standing. This very considerable difference clearly indicates the superiority of the row house for substantial low-cost dwellings. The cost advantage applies not only to first cost, but is even more important with respect to low upkeep cost in such items as heating, repairs, painting, etc."

The row house need not be monotonous, backers maintain, being adaptable to the same variations in modern architecture as the single dwelling. Sound-proofing of party walls will do much to insure privacy.

The house groups, according to the most advanced plans, will follow modern functional architecture in design.

They will front directly on the street. This will make available a very large plot of ground at the rear of the houses, forming the center of the house block.

Instead of fencing this off into individual back yards and running an unsightly alley through it, community planners now suggest turning the whole space into a large community garden and park. The most attractive outlook for the house will thus shift from the front to the back.

When one considers our modern life, it may seem apparent that this shift is quite normal. In horse-and-buggy days, a front porch was a pleasant place to sit in the cool of the evening and nod to one's friends as they passed by. But since one's friends now speed by in automobiles, nodding to them gives no satisfaction! The street has become increasingly a place of noise and smells, decreasingly a neighborly thoroughfare.

Architects now suggest we turn our backs upon it and center our community life in the restful beautiful surroundings of a rear garden. Front door and back door will be replaced by a service entrance and a garden entrance—as is the case in Radburn, an experimental small residential city near New York City designed for life in the motor age. The living room will now overlook the garden, the kitchen giving out on the street.

The garage will be taken into the house; or large community garages may be used. This would do away with the driveway and a walk running around the house to the kitchen entry. More space will be made available in this way for garden and lawn.

German Development

Most striking and most modern of all housing developments up to this time is the one known as New Mayland, in Frankfurt, Germany.

For five years a German named Ernst May worked on a housing ideal (or *Siedlung*) that has grown to include 15,000 houses—all planned with the thought of providing low cost, fully equipped modern homes for the average man.

The architectural methods used were purely functional—the simplest and most direct means of providing the kind of house desired was always employed.

"The visitor to the most recent developments, such as Westhausen or the Friedrich Ebert Siedlung," writes Douglass Haskell, "finds houses not in squares but in long straight continuous rows, facing not one another but all the same way, with wide garden spaces between, the rows at right angles instead of parallel to all but a very few streets."

These rows look like long shoe boxes, placed so that the windows of the houses face east and west. Morning and afternoon sun is assured in all the houses.

Roofs are all flat, and no applied ornament or other detail not necessary to the structure is to be found in the whole development.

"The rows," Haskell says, "are continuous because of the soil. Since the houses are joined, a lot of soil is saved from useless space between them, and added to the gardens. Building height, too, is in relation to the soil—the soil first of all, and only much later the 'land.'"

"Frankfort believes that a citizen is much happier when he can step right out of his living room into a garden and get his fingers in the dirt; and this is the reason why the ideal is a house of two stories, joined to its neighbor by the party wall; flats or apartment houses are built only as stop-gaps for the most pressing need."

From a distance, from the air, and from the ends of the long rows, the appearance of the houses is white. But the fronts are colored to provide a note of variety.

Use of the cubical plan permits the greatest amount of interior space, and windows are made flush with the walls to contribute to this idea. Walls are thin, being constructed on modern

principles of the insulated fabricated wall.

Well-planned interiors add to the impression of spaciousness, according to Haskell. Compactness and efficiency are also features of the rooms. "The bathroom," he writes, "and particularly the kitchen are special triumphs, the first for Germany, the second for anywhere; the Frankfort kitchen is standardized with compactness and convenience surpassing anything I have yet seen in comparable houses. It was designed by a woman, Frau Schuette Lihotzky."

Pictures of housing developments of this kind do not give the impression of monotony one might expect.

Home Equipment

Many labor-saving devices and conveniences not found in the house of today are anticipated for the future. These range all the way from massage apparatus in the dressing room to a mechanical robot which turns the lights on and off when requested.

An inspection tour of an ideal house will help to present the new ideas in interior arrangement and appliances.

Entering the house by its aluminum door (which may be made to open when a person approaches it) the skillful and compact arrangement of floor plan will be noticed.

All rooms will probably open off the hall, and the living room will be separated as much as possible from the kitchen and sleeping quarters. Sizes of all rooms will be increased.

The living room will be large, airy, sunny, with windows forming a whole wall.

The window surface will probably continue to increase . . . Under the antiquated methods of construction now pursued, a large window is a tremendous luxury because it leaks so much heat; but with the development and substitution of devices other than windows for ventilation, the bulk of the windows will be relieved of this function, and can therefore be made more secure and better insulated.

With air conditioning, windows will not be openable, sole function being to admit violet-ray sunlight.

Furniture in the living room may be of aluminum or some light wood or other metal. Much of it, such as davenport, bookcases, radio cabinets, etc., will be built-in, or made up in combination units. Example of this tendency is the davenport with bookcase in its back, marveled at by visitors to Authorless Katherine Brush's New York studio-apartment.

Probably there will be few rugs, the resilient interestingly colored floor requiring no covering.

Walls may be dull metal, painted with aluminum paint or metal foil, plastered, or treated with a variety of new finishes. Mirrors will probably be used to make large wall sections. Many foreign houses have movable partitions between rooms, allowing the whole house to be thrown into one large room. The walls of such houses are transparent, as are many of the partitions. Some translucent and some opaque partitions are used where privacy is necessary.

Ceilings, as well as walls, will probably have sound absorbing and resisting properties. Acoustical tiles and plasters are even now being used. Along with this must go close fitting doors, as cracks around the door nullify precautions taken against sound penetration.

Lighting will be indirect and concealed. The aluminum and glass house on Long Island is lighted by a Neon tube running around the tops of the windows, light from which can be varied to any desired color. Another possibility in lighting, according to the *American Magazine* for March, 1932, "has to do with a certain kind of ray, used with a special plaster. When the ray is 'turned on' the whole wall lights up, illuminating the room without a single lamp or fixture."

Norman Bel Geddes, writing in the *Ladies Home Journal*, discusses the idea of turning the dining room into a mere raised platform or alcove. Some plans dispense with it entirely.

The advantage of the alcove or platform is that it can be made part of the living room after mealtime, thus enlarging the main room. Curtains or sliding partitions could be used to conceal this part of the room during preparation for and cleaning up after meals.

One suggestion is that the dining room, if any, be used for the accommodation of radio, television, and similar appliances. It will become the "theater of the home."

Lee McCanne of Stromberg-Carlson Telephone Mfg. Co., presents an outline in *Radio Retailing* of what we may expect in the way of home entertainment features in the future:

"The complete home of the future," says Mr. McCanne, "will probably contain the following entertainment devices: A radio receiver, an electric turntable of the automatic record-changing type, a talking-movie projector, a television receiver-projector, and a 'talking book' reproducer. Many will also have an electronic 'organ' or other musical instrument more efficient and flexible than present mechanical designs. Shortwave reception may find, and hold, a place."

Goodwill...Sales...Profits

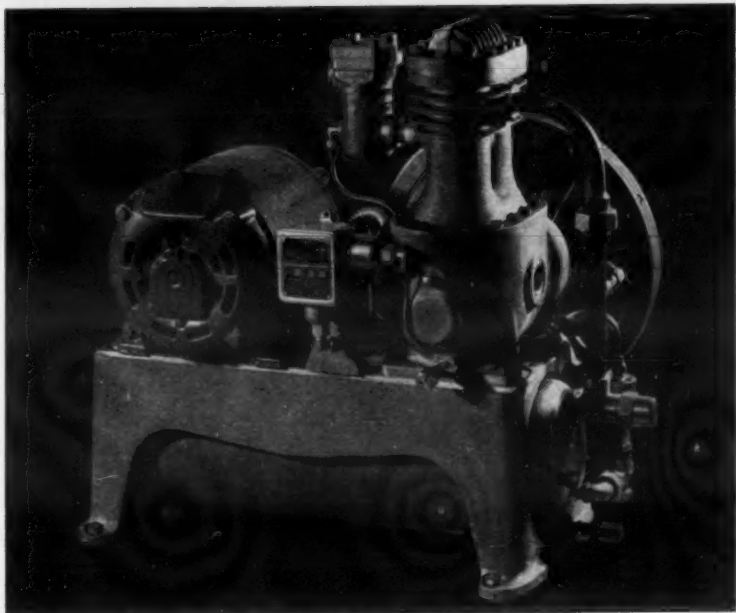
...with a York Franchise



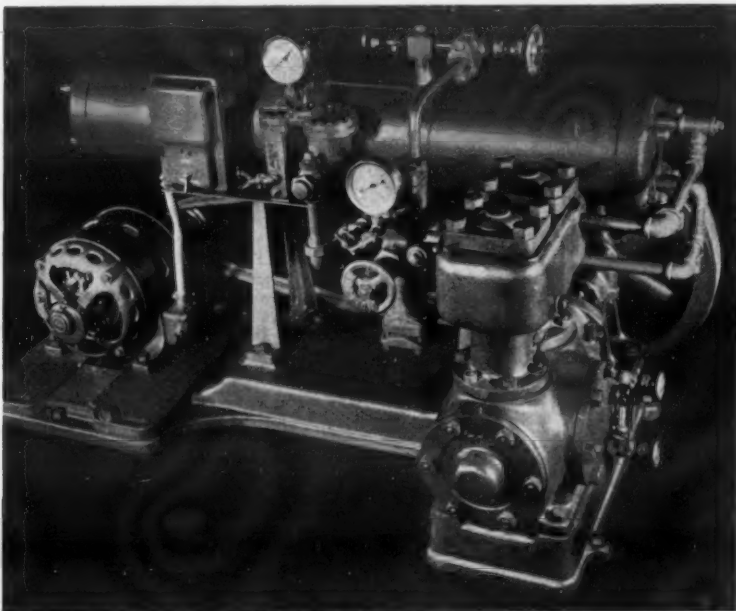
York offers a *complete* line of Commercial Refrigerating and Air Conditioning Units, engineered and built to meet today's demands... efficient... flexible... sturdy... automatic.

That's why York distributors and dealers are always able to offer the correct system for each job... correct as to capacity... correct as to type. And they can offer York equipment with absolute confidence as to its quality and dependability... a confidence born of the knowledge that there is something more than half a century of *manufacturing* experience behind the name York. That "something more" is this. They are selling the product of an organization which has never confined its activities to manufacturing alone but which, instead, has always installed and taken full responsibility for the overall design and proper functioning of the entire system... an organization dedicated to the belief that it is the completed job in operation which determines how good an investment the purchaser has made.

To keep pace with the ever increasing demands of rapidly widening fields of application in the smaller capacities, York is today expanding its sales and service organization to include a limited number of distributors and dealers who are prepared to take advantage of the profit possibilities offered by either York Refrigeration, York Air Conditioning, or both. You can build goodwill, sales and profits on the name of York... a name which is everywhere recognized as a symbol of efficient, trouble-free refrigeration and air conditioning.



FREON REFRIGERATING UNIT. Designed expressly for the use of Freon as the refrigerant, this complete line of units sets a standard far in advance of anything yet introduced in the commercial field.



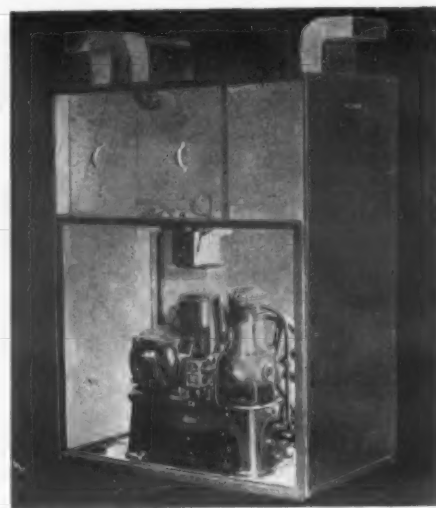
AMMONIA REFRIGERATING UNIT. Designed expressly for ammonia, these units are of the heavy duty type and are available in a range of capacities to meet every commercial refrigerating need.



CEILING TYPE UNIT AIR CONDITIONER. Designed to meet the varying demands of comfort air-cooling and heating in offices, stores and restaurants as well as for industrial applications.



FLOOR TYPE UNIT AIR CONDITIONER. A compact year 'round unit air conditioner for installation directly within the room to be conditioned. Provides summer cooling and dehumidifying; winter heating and humidifying.



CENTRAL SYSTEM AIR CONDITIONER. A complete year 'round air conditioner for basement installation. Air distributed to rooms by means of ducts. View shows cover panels removed.

YORK REFRIGERATION AND AIR CONDITIONING

The coupon is attached for your convenience. Use it now to secure more detailed information. There is still time to cash in on a York franchise this season. →

YORK ICE MACHINERY CORPORATION, YORK, PA.
Please furnish more detailed information on your plans for wider distribution of

- ☐ York Commercial Refrigeration
☐ York Air Conditioning

Name.....

Firm Name.....

Street.....

City.....

INTERVIEWS

BY ELSTON D. HERRON

South Bend Kelvinator Distributor Enters Retail Field

Folks are pretty cheerful about business in South Bend, Ind. (population 100,000.) Although two of the town's banks are operating on a restricted basis (no withdrawals on old deposits), and several are closed, two of the largest banks are open 100 per cent. The town's two biggest factories—Bendix and Studebaker—are hiring men and stepping up production schedules.

First place we noticed in South Bend was the new retail salesroom of the Northern Indiana Refrigeration Co., Kelvinator distributor. Inside was G. F. Hutchinson, general manager of the company. For 10 years he was a Frigidaire field man, but took the job with the Kelvinator concern last October.

Of course we asked Mr. Hutchinson, "How's business?"

His answer: "So good that we haven't got things arranged properly in this new salesroom yet, and we've been in it a month."

This is the first month of the distributor's retail business. It has been all wholesale before. Eight retail salesmen have been employed, Mr. Hutchinson having brought some of them in from out of South Bend.

Sales have been better than one unit a day during the month that the company's retail department has been in existence. Of these sales, 32 per cent were for cash, and all of the installment buyers made down payments of 10 per cent or better. Seventy per cent of the retail sales have been for the 6-cu. ft. Kelvinator selling at \$208 in South Bend. Mr. Hutchinson expects to sell 250 units at retail this year.

The company has had to turn down 15 sales this year because the buyers' credit rating wasn't good enough. Associates Investment Co. handles the retail department's time-payment paper.

Getting Stock Main Problem Of Frigidaire Distributor

The Frigidaire distributorship for seven counties in northern Indiana has its headquarters and retail showroom just across the street from the Kelvinator company at Main and Colfax. It is the Home Modernizing Co. and has been in business just since Jan. 1.

M. L. Hogan, the sales manager, was for seven years commercial sales manager of the Stover Co., Frigidaire distributor in Chicago until last year. "How many units have you sold at retail since Jan. 1?" we asked him.

"We've sold 61 so far (May 12), and we have 17 unfilled orders on the books right now. Our big trouble this year isn't selling; it's getting refrigerators in stock. We haven't had all the units we've needed any time this spring. If we can get enough Frigidaires from the factory, we'll retail 365 this year." The company has six men working on household sales.

People making between \$1,500 and \$2,000 a year are the ones who are buying refrigerators this spring, and most of them are buying 5- and 6-cu. ft. boxes. What's more, 50 per cent of the distributor's retail sales this year have been for cash.

The Frigidaire establishment's commercial business has not been so good lately. Mr. Hogan explained that only 10 per cent of the city's normal commercial market (markets, restaurants, etc.) is unsaturated now, and that commercial sales are naturally slow.

This distributor isn't doing much local advertising right now. "We'll start advertising more heavily as soon as we can get in a good stock of units. Right now, we can't begin to keep up on deliveries," Mr. Hogan said.

Setting Up for Sparton

Elbel Bros., a music store at 112 North Michigan St., had just been appointed the Sparton distributor for 11 counties in northern Indiana and southern Michigan when we called there. Don Elbel, son of the store's proprietor, is going to manage the company's refrigeration business. He has hired five men to sell Sparton at retail in South Bend. The store had six units on the floor.

Crosley Going Strong In South Bend

Both the Kelvinator and Frigidaire men had mentioned that Crosley was giving them some of their biggest competition this season, so we hiked out to the edge of the business district to see J. E. Davidson, Crosley distributor. His company is the Davidson Sales Co. (109 North Monroe St.)

When we got there, Mr. Davidson was just finishing a friendly little argument in the back room. One of his dealers had come in for a truckload of Crosleys, and Mr. Davidson

was having a little trouble convincing the dealer that he would have to be satisfied with one lone unit.

"We're so far behind on orders we can't hope to get caught up for a good many weeks," he said later. "Weeks ago I placed an order in at the factory for eight carloads. Last week I went down there and told them I'd take all they can send me."

Three weeks ago, the Davidson company organized a department to retail Crosleys in South Bend. Its business had been strictly wholesale (in 16½ northern Indiana counties) before. Five outside men are working in South Bend for the retail division.

Since Jan. 1, the company has sold 200 Crosleys at wholesale, and in its three weeks, the retail department has sold 18 units. Fifteen of the 18 sales were for cash!

Mr. Davidson figures that his retail men will sell five carloads of Crosleys in South Bend during June, and that his dealers will sell "all the units the factory can ship into this territory." During the town's refrigeration show from April 22 to 27, seven Crosleys were sold, and six of the buyers paid cash on the spot. The Franklin Investment Co. of Ft. Wayne handles the company's time sales.

Eighty per cent of all refrigerators sold by this company this year—at both wholesale and retail—have been 6-cu. ft. models. Mr. Davidson thinks his wholesale business for this year will be at least 50 per cent better than it was last. He has no basis of comparison for this year's retail sales.

Two pieces of good news had come to Mr. Davidson before we called on him that morning. First he got word that his Goshen (population 10,000) dealer had sold 15 Crosleys in the past two weeks. Then, while Mr. Davidson was at the bank getting some installment payment forms for a man who had ordered a refrigerator the night before, the man came in and paid cash in full.

Colip Waits for Lower-Priced Grunow

Over at 114 West Wayne St. we called on Colip Bros., Inc., new Grunow dealer. This is the firm's first time in the electric refrigeration business. It has been operating an electrical contracting and appliance sales business for 24 years, according to L. W. Colip.

The company is employing three salesmen to sell Grunows in South Bend. Since it took on the Grunow line less than a month ago, it has sold two units, both for cash—one to a painting contractor, the other to an office clerk. As soon as Grunow Corp. brings out its lower-priced refrigerator, the Colip concern is going to start a local advertising campaign, Mr. Colip said.

"It's taking us a little while to get under way in the refrigeration business, because we're new in it," he remarked. "We're going strong on washers this spring, though. Last week, we sold nine Thor washers, and 20 per cent of the business was for cash."

General Electric is sold in South Bend by Wyman's department store, and Norge by the Gibson Co. Norge, we heard, is doing a nice job in South Bend this spring. We wanted to call at both of these places, but train time interfered.

One thing impressed us especially about the refrigeration dealers in South Bend. Every man we talked to showed a healthy respect for his competitors. Not one man knocked another dealer or another line. It seemed mighty good to us.

Bloomington's Business Not Good, Not Bad

General business conditions in Bloomington, Ill. (population 30,000) are neither very good nor awfully bad, several refrigeration dealers said. The town has three banks open and three closed—the largest bank being one of the "open" establishments.

Principal factories in the town are Williams Oil-O-Matic Heating Corp., Meadows Mfg. Co. (washers), Hayes-Custer Stone Co., American Foundry & Furnace Co., and the Magill Foundry. Williams and Meadows are the only plants operating on substantial schedules.

A good share of the electric refrigerators sold in Bloomington each year are Ice-O-Matics. They are distributed by the local branch of the Illinois Power & Light Corp., and through several other retail outlets. Furthermore, several competitive dealers said, the town has a healthy respect for the Williams company, which makes sales for Ice-O-Matics.

Utility's Sales Booming

At the Illinois Power & Light branch, we met George H. Wetzel, manager of appliance sales. About refrigerator sales he said, "I can't tell

you why business is so good right now, but our sales have been booming."

"We expected refrigerator sales to be few and far between this spring—with three closed banks and the rotten weather we've had—but instead, we've sold 85 refrigerators so far this year (May 17), and all but five or six of them were sold during the last six weeks."

Mr. Wetzel hasn't found cash sales plentiful, but has noticed that down payments are larger than they have been in the past. The company handles its own installment paper.

"How many units do you expect to sell this year?" was one of our questions.

"We think we'll sell at least 160 this year," Mr. Wetzel said. "That will be 20 per cent less than last year, but we can't expect to do as well as we did then. The banks and the weather in April and May have hurt us."

The utility has four outside salesmen working on refrigeration, and had a stock of 25 Ice-O-Matics on the floor.

On other appliance sales this season, Mr. Wetzel report that washers are moving fairly well, vacuum cleaners fast, and electric ranges very slowly.

Norge Expects to Equal 1932 Sales

Norge is handled in Bloomington by the Emmett-Scharff Electric Co., a firm which does electrical contracting and sells a line of radios, washers, lighting fixtures, and small household appliances.

F. E. Emmett, one of the proprietors, said that the concern has sold 12 Norges this year, and expects to sell 25 (same as last year) before the end of the season. The company has no outside salesmen, Mr. Emmett and his partner doing the selling. Six-cu. ft. units have been the best sellers this year, we were told.

Mr. Emmett said that the utility company is by far the strongest competition because it will accept such small monthly payments, and has a large traffic from people who visit the office to pay bills.

This dealer had two complaints—that the weather has been too cold and rainy this spring, and that "everybody seems to be looking for cheap merchandise this year." When we called, the store had six Norges in stock.

37 Kelvinators Sold Since January 1

At 110 West Front St. is the hardware store of G. H. Read & Bro., Kelvinator dealer. This dealer has found the refrigeration business good in 1933.

William Read, the proprietor, said that his store has sold 37 Kelvinators since Jan. 1—an increase of 200 per cent over last year in dollar volume, and more than 200 per cent in unit sales. The company has been with Kelvinator four years.

Best sellers this year have been all-porcelain 5- and 6-cu. ft. boxes—selling for \$175 to \$200, Mr. Read told us. The middle class of people has supplied most of the buyers this season—and a larger percentage of them has paid cash than in years past.

Just recently, a local grocer bought \$650 worth of commercial equipment for his store, and paid cash. That made Read's third commercial sale this season.

Mr. Read has no doubt about selling 100 household units this year. In 1932, his store moved 75. He has two outside salesmen working on refrigeration. Redisco handles the dealer's time payments.

The company has one Kelvinator in the window, one in the front of the store, and has a nice display of 10 different sized units up on the second floor. Mr. Read hires an independent service man to do all Kelvinator installation and service work.

Sells Complete G. E. Kitchen

Gray-Trimble Electric Co., Inc., has been the Bloomington dealer for General Electric appliances for two years. There we talked to L. J. Metcalf, one of the store's two salesmen.

Just as we stepped in the salesroom, at 107 E. Front St., Mr. Metcalf was closing a sale for a \$240 G. E. refrigerator. He felt pretty good about it, because the buyer paid cash.

The dealer has sold eight G. E.'s this year, five of them in May, Mr. Metcalf said. They have orders for two G. E. Juniors and two 10-Star units, too, and will deliver them as soon as the refrigerators can be secured. Last year, the dealer sold just five units.

Biggest event in the dealer's operations this year was its sale of a complete electric kitchen a couple of months ago. The buyer was George J. Mecherle, head of Bloomington's State Farm Mutual Insurance Co., and he paid cash for the whole works—which included a 15-cu. ft. refrigerator and the most expensive "Hostess" model of the G. E. Hotpoint range line.

G. E. standard 6.7-cu. ft. boxes have comprised the bulk of the store's sales this year. It does its own installing and servicing, and handles its own time paper. Seven years ago, this store handled G. E. refrigerators, then took on Majestic, then Westinghouse, and

last year went back to General Electric when it took on the entire G. E. appliance line.

Grunow Dealer Gets Started

Entering the refrigeration business for the first time is the Alverson Sales Co. at Front and East Sts. It has had the Grunow line since the middle of March. Before that, it handled just a line of radios and radio supplies.

"How many have you sold?" we asked A. R. Alverson.

"We've sold and delivered three—all for cash—and we have orders for six more, but the buyers are waiting to pay for them when the bank situation is straightened out. We expect to sell 50 units this year."

The dealer is going to put on several outside salesmen, and has arranged to have its time payments on refrigerators handled by C.I.T. and a local finance company. When we called, Mr. Alverson was selecting mats for a series of ads in local papers. There were three Grunows on the floor.

7-Cu. Ft. Majestics Popular At Capital of Illinois

Electric refrigeration dealers in Springfield, Ill. (the state capital), are doing a cracking good business this spring. They told us that the city, which has a population of about 72,000, is in far better condition than most of the country. All but one of its banks are going full blast.

First call was on the A. W. Sisking Co., 116 North Sixth St., Majestic dealer for four years, where we talked with M. R. Davlin, one of the managers. The store sells hardware, farm machinery, electrical appliances—and baby chickens. Thirteen outside men sell the company's radios, washers, and refrigerators.

Said Mr. Davlin: "We've sold 30 Majestics since Jan. 1—most of them in the last five weeks (previous to May 17). Most of the units sold have been 7-cu. ft. models selling for \$194.50. We're sure we'll sell 100 refrigerators by the end of the year. People drawing salaries of \$150 to \$200 a month are doing most of the buying."

Mr. Davlin said that his company would have sold more refrigerators by this time, if Governor Horner had made his appointments of government employees in the capitol building sooner. The governor is still withholding announcement about the jobs, and Mr. Davlin pointed out that a lot of present employees will buy refrigerators as soon as they are sure of their jobs for another term.

The Sisking company has found classified advertising to be most effective in bringing in prospects. The store advertises a "good used refrigerator," gets the prospects to the store, and then does its best to sell a new job. Only once or twice this year has a prospect finally bought one of the reconditioned units.

When we called, there were 25 Majestics in stock. The organization handles its own paper, and has its own men for installing and servicing refrigerators. Amount of cash business has not showed any increase over last year, we learned.

15 Grunows in Three Weeks

Just getting under way with the Grunow and Ice-O-Matic lines in Springfield is A. Dirksen & Sons. This company has an appliance store at 114 North Fifth St., and a furniture store a block or two away. The stores have had Grunow three weeks, and Ice-O-Matic one week. Last year they handled Copeland and Buckeye.

In the three weeks, Dirksen's five outside men sold 15 Grunows—most of them fives and sixes, according to W. A. Tarrant, one of the appliance store salesmen. Frank Redmond, the appliance store manager, expects to sell more than 150 units this year—more than last year, Mr. Tarrant said. He remarked that people in the \$2,500-a-year class have been the best buyers.

There were 10 refrigerators in stock when we dropped in—four Grunows and six Ice-O-Matics. The company does its own service work, and finances its sales through the Associates Investment Co. It has handled Williams commercial equipment for some time, and has sold eight units this year—five of them for beer cooling.

Porcelain Models Lead in Sales

Between 45 and 50 Springfield folks have bought Kelvinators this year (up to May 18) from the Schlitt Hardware Co. at 422 East Adams St. Young Franklin C. Schlitt is refrigeration manager, and said that the store has been a Kelvinator dealer for three years. Before that, it handled Zerozone.

Eighteen of the store's sales this year were made during the first 17 days of May, Mr. Schlitt reported. Wage earners and people with moderate salaries have been the principal buyers this year. The manager has five salesmen working on refrigeration, and expects to sell 150 units this year—a 100 per cent increase over last year's sales.

Early this year, lacquer jobs moved faster than other type units. Now, the all-porcelain line is going best, and Mr. Schlitt thinks that by pushing his

salesmen a little harder, the deluxe line will be the best seller the rest of the year. He is just starting a 30-day advertising campaign on deluxe models. Refrigerators of the 6.5-cu. ft. size and larger have been most popular from the standpoint of size all year.

Two of the store's five salesmen spend a part of their time on commercial sales, and have sold six commercial units this season. Another of the men works part time on water coolers, and has sold two this month.

Schlitt's has its own service department, and handles a part of its time sales itself and the rest through Commercial Investment Trust. It had eight Kelvinators on the floor when we called.

Utility-Dealer Setup For Frigidaire

Over at the Illinois Power Co., 314 East Capital Ave., we found a rather peculiar refrigeration sales setup—one that is almost ideal from the standpoint of the retail organization there.

The utility company is the Springfield distributor for Frigidaire. It has one dealer, the F. E. Kunz Refrigerator Co., and the dealership is located in the salesroom of the power company. The latter charges the dealer no rent, and orders units from the factory just as the dealer needs them. All refrigerator sales made in the utility's offices are the dealer's. The dealer also has the benefit of the utility's store traffic and its advertising.

E. C. Fleischli, the power company's appliance sales manager, explained that the dealer doesn't have all the advantages from this arrangement. "Before we started this plan, our customers always expected us to service their refrigerators free of charge, no matter how long the units had been in use. Now, we can avoid that expense, because the dealer does that. And as for sales, the Kunz company can do as good a job as we could, and our salesmen can spend their time on our gas and other electric appliances."

Downstairs in his office, we met Frank Kunz, the Frigidaire dealer, busy as a bee. He has been the Springfield dealer for three years. During the previous six years, he was sales supervisor in the Springfield area for the Peoria Frigidaire distributor (before the Springfield utility became a distributor).

"How many Frigidaires have you sold this year?" we asked Mr. Kunz.

"We've delivered 104 units, and we have 25 orders on file—the deliveries to be made as soon as we can get the refrigerators here. We made 38 deliveries the first 10 days of May. Most of our sales have been for all-porcelain 6- and 7-cu. ft. boxes."

"How many do you expect to sell during 1933?"

"I figure we'll sell between 300 and 325, about 40 per cent more than we sold last year."

Mr. Kunz said that most of this year's buyers have been people with incomes of \$125-\$175 per month. Firemen, postmen, policemen, street railway employees, and the like. While we were there, a mail carrier came in to leave the name of another postman who is a refrigerator prospect.

The dealer has seven outside salesmen, and they have made 70 per cent of this year's sales. All of them are on straight commissions. Mr. Kunz said that he has had more cash sales and larger down payments this year than ever before.

Nine Frigidaire commercial installations have been made in Springfield this year; two of them were beer coolers. The dealer handles some of its time sales paper, the utility handles part (for buyers who want to make payments when they pay electricity bills), and a part of the sales are financed through G.M.A.C.

Mr. Kunz is much concerned about the effect of low-priced units on the dealer's profits. He said, "We've got to keep our men selling the higher priced units, because if we don't, installation and service costs will eat up our profit."

"When the average refrigerator sold for \$300 or more, it took one call to make the installation, and the matter was settled. We made a good profit on that \$300 sale. Now, if we sell three units for less than \$100 apiece, we take in less money than we once did on a single sale, yet we have three times as much installation expense. That's why we've got to use low priced jobs just as leaders."

This week, Mr. Kunz is hiring a home economist—Miss Breddmeyer—to work among Frigidaire users in the city. She will call at each user's home, and give the housewife a new Frigidaire menu book. And she will get as many prospect names as possible.

These names will be turned over to Mr. Kunz, who will give them to his salesmen. On each sale to one of these prospects, the salesman will be charged 2 per cent of the cost of the refrigerator purchased. Mr. Kunz figures that the total of these 2 per cent charges will be enough to pay Miss Breddmeyer's salary.

The dealer believes the 2 per cent charge justifiable because the salesmen could not secure the names of such good prospects except by long hours of canvassing, while these are thrown right in their laps.

MAKE AN *Extra profit* ON EVERY REFRIGERATOR YOU SELL

MAKE EXTRA MONEY BY SELLING FLEXIBLE RUBBER TRAYS OR GRIDS TO PRESENT USERS OF YOUR REFRIGERATOR

Here's the easiest way in the world to make every refrigerator sale pay you a *plus* profit. Also a way to secure additional revenue from all present owners of the refrigerator you handle.

Simply sell flexible rubber trays or flexible rubber grids to both new and old buyers.

Flexible rubber trays and grids are easy to sell. The demand for them has grown enormously in the past few years. And this demand is growing bigger every day.

Dealers everywhere report that this modern invention is increasing in popularity to an amazing extent. Flexible rubber trays and grids save time, work and trouble. And anything that does that is *bound* to sell—and sell fast.

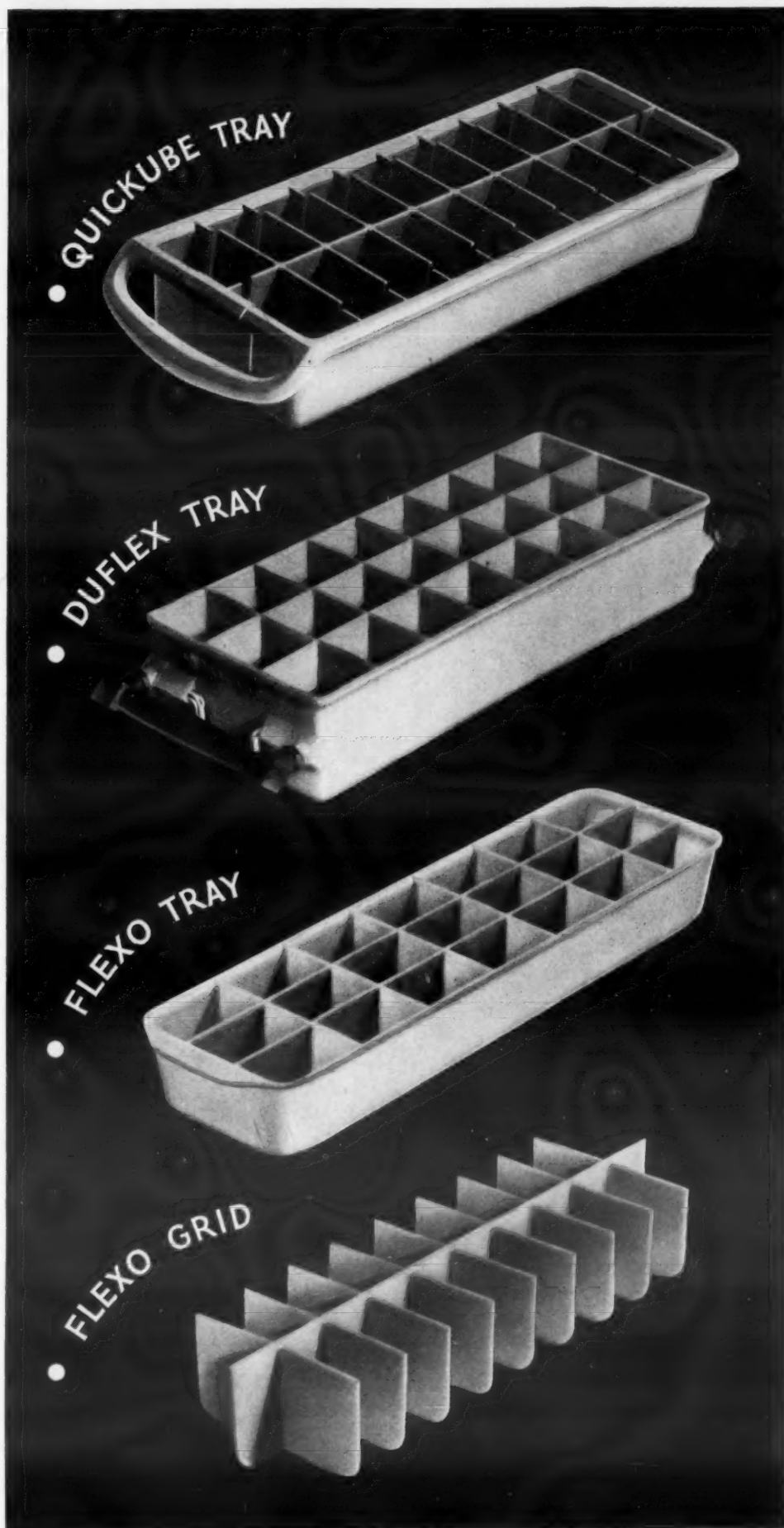
Besides being a profitable and fast selling showroom item, flexible rubber trays and grids also open doors to actual refrigerator sales. They make call-backs easier and more profitable.

Today flexible rubber ice trays and flexible rubber grids for metal trays are endorsed by all leading refrigerator manufacturers and by America's most eminent domestic science authorities. More than two million are now in use.

They are made to fit all makes and all sizes of mechanical refrigerators. So every owner is a prospect for one or more of them.

As long as these extra profits are so easy to get, you might as well make sure of your share. Get the facts about flexible rubber trays and grids by consulting the manufacturer of the refrigerator you sell. Or write direct to us for full details.

THE INLAND MANUFACTURING
COMPANY • • • DAYTON, OHIO



● The Quickube Tray is a flexible rubber ice tray used exclusively by Frigidaire. This tray releases ice cubes instantly... one at a time or the whole trayful... with just a slight pressure at the bottom of the tray.

● The Duflex Tray as used in the General Electric Refrigerator combines full flexibility with rigidity by means of stainless steel reinforcing bars. It is a tray that will not tear or distort.

● The Flexo Tray shown here is a modern flexible rubber tray now used as standard equipment by Kelvinator, Copeland, Leonard and other well-known makes of refrigerators.

● This ingenious new invention, introduced for the first time this year, combines faster freezing with easy removal of ice cubes. These grids are now used as standard equipment by Frigidaire, General Electric and Westinghouse.

Flexo Trays Flexo Grids



BY GEORGE F. TAUBENECK

En Route and En Passant

Last week Elston Herron and the writer finished the job of breaking in a brand new 12-cylinder speedster by touring through Michigan, Illinois, Indiana, and into Missouri—stopping frequently and questioning dealers, distributors, and manufacturers as to the state of their business.

EVERY FIRM WE INTERVIEWED WAS AHEAD OF LAST YEAR.

It was a grand trip, and we returned highly elated over the condition of the industry at present.

Only one other trade, profession, or industry seemed to be so busy as refrigeration—and that was the sign business. We must have seen thousands of new "BEER" signs—painted, maza, and neon.

We haven't space to record all our conversations and observations in this issue, but must be content to set down what follows. Next week Mr. Herron will contribute a flock of interviews with other people contacted in the cities mentioned below. Also see his writings on page 8 of this issue.

CHICAGO, ILL.

Majestic Wheels Humming

Driving into Chicago about one o'clock in the morning we were amazed to note the number of factories that were running night shifts.

night, but rarely have we seen any industrial activity at such times.

Maybe it's A Century of Progress, or feverish pre-dictatorship activity; but whatever the cause, Chicago's factories are busy.

Stopped at the Majestic plant on Dickens avenue on our road out of the city, and found it humming. Two new radio sets coming off the line, including a super-job for motor cars. One of the first of those will be in our speedster very soon now.

Biggest event of the day was meeting Le Roi Williams, new vice president and general manager. Somehow he wasn't quite what we were expecting. A lawyer, the man who materially aided Mr. Grigsby in his fight to break up the gigantic radio combine, he seems anything but the serious, pompous individual he might be. A regular fellow. We liked him instantly. So would you.

Mr. Williams loves horses. That should recommend him to most of us. It's a good sign. Elsewhere on this page you'll see a picture of Mr. Williams on his prize jumper, Gaelic. On this horse he has won many ribbons, medals, and other decorations. Now we ask you—does he, in this picture, look like a brilliant lawyer who has turned vice president and general manager?

Saw and talked with Harry Alter and Charles Klopp, John Ditzell's Men Friday and Saturday (don't get us wrong here—we saw them on Tuesday—member Robinson Crusoe's Man Often in the last three or four years we have motored into Chicago late at Friday?). Even if we discounted their

optimistic utterances, we'd be ready to believe that Majestic business is a lot better than they had expected it would be. Their active factory would prove it.

BLOOMINGTON, ILL.

Biggest Experimental Staff in History

Arrived at the Williams Ice-O-Matic plant just in time to snap this photograph of President C. U. Williams, himself, entering the office building to put in a day's work. Mr. Williams is our idea of a self-made man. It wasn't so long ago that he was the Willys-Overland automobile dealer in Bloomington, and now he has enriched



his city by building a big manufacturing business there.

Found Advertising Manager Don Frank in conference with J. M. Cullinan, editor of the Williams News-O-Matic. They were in high spirits.

Sales Manager Stanley Bell being absent, they couldn't furnish exact figures about their increase in shipments, but they did take us out to the plant and show how busy it was. Several cars were being loaded with refrigerators at that very moment.

LeRoi Williams on 'Gaelic'



Majestic's new vice president and general manager is a keen equestrian. He is shown here taking a hurdle on his favorite jumper.

Commercial business is especially good. (Note to Howard Mateer: Mr. Frank testifies that his advertisements of Williams commercial compressors in ELECTRIC REFRIGERATION NEWS have drawn a surprisingly large number of exceptionally high grade inquiries. Every one from an outlet they'd be proud to have on their roster. No surprise to us, is it? That's the kind of people who read the News.)

Williams has just arranged with Liquid Cooler Corp. for Williams distributors to purchase and resell Temperrite beer and water coolers.

Most interesting of all to us was the information that the Williams experimental laboratory is now operating under the biggest budget and with the most men, of any time in the history of the Williams Oil-O-Matic Heating Corp. W. W. Williams is directing its work. It should be revealing no secrets to report that one thing Williams is



working on is air conditioning, because it's a logical development for a concern which is a pioneer manufacturer of both heating and cooling equipment.

R. O. Ahlenius, general manager, is an authority on quick-frozen foods. So is his son, who is preparing a university thesis on the subject. Mr. Ahlenius reports that the quick-freezing business is showing signs of a revival. Swift, he says, may be getting under way again soon, and he has information of renewed interest displayed by at least one chain store organization.

A. T. Simmons, export manager, has popularized the ship-deck game of shuffleboard in the Williams factory, and during the noon lunch hour, it is being played assiduously by the office and factory help.

Just a few days ago Mr. Simmons sent a shipment of Ice-O-Matics to Palestine, another to the Virgin Islands, and a shipment of Oil-O-Matic water heaters to Tel-Aviv, a suburb of Jaffa. Inhabited mainly by wealthy Hebrews, Tel-Aviv (according to the well-traveled Mr. Simmons) is laid out like a California city, with orange groves, ultra-Mediterranean architecture, and all the trimmings.

He was quite proud of an inquiry for water heaters he had just received from A. B. Randall, commodore of the United States Lines. Mr. Randall wrote at sea from the Leviathan.

SPRINGFIELD, ILL.

900 Ranges from City Hall

To a couple of rain-sodden travellers arriving in the capital city of the sovereign (?) state of Illinois, Springfield was glaringly devoid of refrigeration displays.

We cruised up and down the streets, back and forth over the cross streets, and couldn't locate a window model. Electrical dealers by the half-dozen, advertising "everything electrical" yet not handling refrigerators. Same was true of hardware and furniture stores. (Careful and plodding interviews with these merchants next morning

produced an identical answer: "They all want us to invest money in display models, and we haven't got it to invest.")

Finally, of all places, we found a display of three refrigerators (Norge, Majestic, Grunow) in the open-door lobby of the City Hall!

Inside we were met by T. L. Kelly, who works in the sales and new-business divisions of the municipal water, light, and power company, which has offices in the city hall. He explained that the organization doesn't merchandise electric refrigerators, but allows any Springfield dealer to display his refrigerator at the City Power & Light Co.'s offices.

He said, however, that the company does sell electric ranges and water heaters—and offers them to its customers practically at cost. When we asked him how range sales have been going this year, he amazed us by saying that the utility has sold between 800 and 900 since Jan. 1! Most of the sales have been made to city employees—policemen, firemen, etc.—Mr. Kelly said.

It handles Hotpoint, Westinghouse, and Marion ranges. The next day, several Springfield electric appliance dealers said they questioned that the utility has sold this number of ranges, that they thought the number was more likely 80 or 90. At the James & Co. (G. E.) office, however, the boys expressed the most profound respect for the remarkable range selling job this municipal power company has done.

For the fiscal year ended Feb. 28, 1933, the municipal company reported gross revenue of \$992,498.05, and a net profit of \$286,894.55. Its plant and equipment, less depreciation and reserve, were valued at \$4,561,581.68.

During the last fiscal year, the company's electric department made a gross income of \$654,469.08, a net profit of \$226,528.11. Its operating expenses were reported as \$287,769.03, and its interest, depreciation, and reserves as \$140,171.94.

From the accumulated earnings of the department, \$30,000 in bonds were retired, and \$383,630.54 was expended for additions. Its outstanding bonds were valued at \$265,000.

Competitor of the municipally owned utility in Springfield is the Illinois Power Co., which supplies electricity and gas in that city and the nearby cities of DeKalb and Sycamore.

While the municipal organization supplies electric current for more Springfield residences than does the privately owned utility, the latter has most of the city's commercial accounts, we were told.

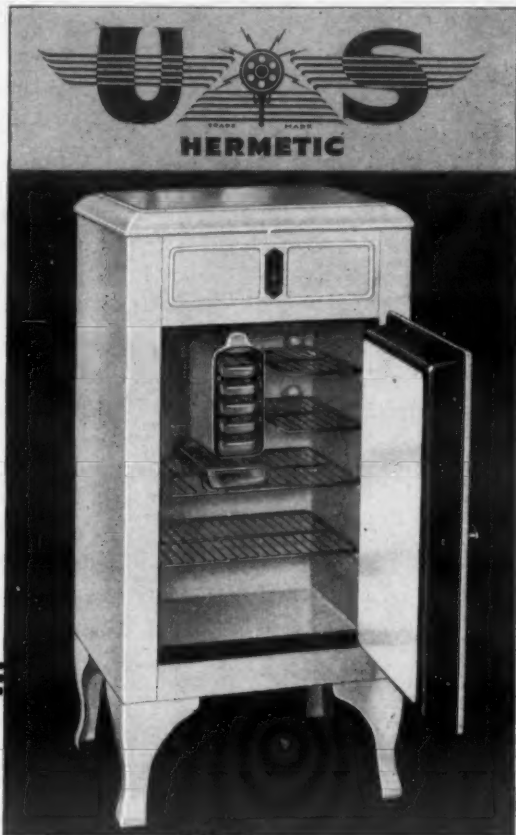
A few long strides out of the central business district is the branch showroom of James & Co., St. Louis G. E. distributor. This display is quite sizeable and includes, in addition to General Electric refrigerators, G. E. ranges, radios, and laundry equipment. The showroom is located directly across the street from the Governor's mansion.

Charles Love, a capital fellow, is in charge of the branch, and oversees the high-powered selling activities of E. C. Spitznagle, C. J. Mount, Paul Bogan, and W. H. Paschen.

Salesman Spitznagle—"Spitz" to his friends—has some social connections which would lead us to believe, if we didn't know it from knowing him, that he is a young man of high calibre.

The Springfield branch's 1933 quota of 240 refrigerators will be reached (Concluded on Page 11, Column 1)

U. S. HERMETIC
represents a basic quality in refrigeration comparable to the value standard in radio which made the U. S. Radio and Television Corporation one of the world's largest builders of receiving sets.



Priced
FOR TODAY
Built
FOR THE YEARS

VALUE FEATURES

Hermetically Sealed, no couplings, no seals to leak.

Exclusive Roto-Pulse Unit, has only three moving parts, requires no oiling.

10-Point Cold Control, enables selection of temperature and freezing speeds.

Safe-D-Froster—unit defrosts without loss of refrigeration.

Porcelain Cooling Unit, compact, accessible, easy to clean.

Abundance of Ice Cubes, from 63 to 126 cubes, depending on model.

4-Position Adjustable Door-Handle; hardware of distinctive design.

Automatic Dome Light, operates with opening of door.

One-Piece Vitreous Porcelain Lining, rounded corners, moulded self supports.

Automatic Overload Protection against excessive line voltages.

Steel Cabinets; complete welding results in one-piece construction.

Broom High Legs; improved appearance and easy cleaning.

Marine Table Top, an essential convenience combined with beauty.

BECAUSE they offer an instantly recognized extra quality... more value per dollar; in the accepted range of investment... U. S. Hermetic refrigerators embody the most powerful sales appeal in today's price-conscious market.

And you, Mr. Dealer, whose aim is profit, consider the meaning of that extra value:—Easier sales, because the quality is quickly demonstrated... Profitable sales because hermetic sealing and the exclusive Roto-Pulse unit, bar all possibility of service "grief"!

Engineered to the finest precision, built to the most exacting standards, thoroughly tested and "run in," permanently oiled, then sealed against the possibility of local service, the Roto-Pulse is assurance to you and your customers of dependable, enduring operation.

Check U. S. Hermetic from every angle—you will be convinced of the extra value it embodies. May we give you all the facts? **SEND THE COUPON** or write, now.



SIX MODELS
\$99.50 up F.O.B. MARION, IND.

U. S. RADIO & TELEVISION CORPORATION, MARION, INDIANA
Gentlemen: Without obligation to me, please send full details regarding the profit opportunity with U. S. Hermetic refrigerators.

Name _____
Street _____
City _____ State _____

EASTERN PENNSYLVANIA
U. S. HERMETIC
COLONIAL STOVE CO., Philadelphia, Pa.
NEW JERSEY DELAWARE

BY GEORGE F. TAUBENECK ---

(Concluded from Page 10, Column 5)
easily, they are confident. Some 50 have been sold in May. About 10 cash deals have been made.

Commercial sales better, also ranges. Laundry equipment moving very slowly.

EDWARDSVILLE, ILL.

Nary a Service Call

Pulling into Edwardsville (population 10,000) after 6 o'clock in the evening, we found two dealerships with doors still open—Frigidaire, and E. A. KELLER, who sells General Electrics and Gibsons from his hardware store.

For four years he's been selling G. E. there, and has installed more than 50 in that time.

Last year he took on the Gibson line, too, and sold 11 models. Not a single one of those Gibsons has ever required a service call, according to Mr. Keller. Consequently, he has sold seven Gibsons easily this year, and has several other prospects practically ready for final action. Says that all the people around town who have been "waiting for electric refrigeration to be perfected" are now entirely convinced that that time has come.

Our miniature camera recorded this impression of what we think is a rather typical small-city dealer.

ST. LOUIS

Mr. Waldsmith's Frigidaires Moving Fast

Out on Lindell St. (St. Louis) near the Coronado—which, gentlemen, is a hotel for you—is a highly attractive and compact building labelled "Frigidaire."

It has an adjacent parking place for customers, a large showroom, complete set of offices, classroom with stage, warehouse, playroom, service department, and all the trimmings under one roof.

And it is air conditioned throughout. W. O. WALDSMITH, who has been the Frigidaire distributor in St. Louis since that General Motors product entered the world, and who was a Delco-Light distributor before that, believes in and practices what he preaches.

Not only does he refrigerate the atmosphere for prospects who are looking over the models, but he makes it comfortable for his office staff, too. And all with Frigidaire room coolers!

Next most interesting feature of this remarkable Frigidaire St. Louis headquarters is "Louie's Place," which is a playroom for the entire organization.

Spacious and comfortable, it is fitted up with chairs, tables, cooking equipment (including a steam table) sufficient for preparing a huge meal, a Frigidaire beer cooler, signs of the "In God We Trust All Others Cash" variety, and an honest-to-God bar.

That bar, gentlemen, is a joy to behold. It must be all of 25 feet long (we forgot to ask), and is complete with battered brass rail, sawdust, spittoons, and a full-length mirror. E. G.

BIECHLER is reported to have given it his unqualified approval.

At a recent rally of the St. Louis sales organizations, eight kegs of beer were served over this bar in two hours—all cooled by the Frigidaire beer cooler in that length of time! Which should be some sort of testimonial.

Assisting Mr. Waldsmith in the distribution of Frigidaire equipment in metropolitan St. Louis, outlying Missouri, and southern Illinois, are H. B. FITZWILLIAM, household sales manager; A. J. WARNER, commercial sales manager; and H. P. MATERNE, air-conditioning sales manager.

The Del-Home Appliance Co. (official name of Mr. Waldsmith's company) does no retail selling. Six "big dealers" in St. Louis, 20 other dealers of more modest size in the St. Louis metropolitan area, and some 65 dealers out in the "provinces" comprise the retail selling force of the Waldsmith organization.

Mr. Waldsmith himself is one of the strongest and most influential refrigeration distributors in the world. He has done a three-million-dollar business in one year (1929), and today he ranks in the top flight of Frigidaire wholesalers.

One of the boys he trained, J. C. CHAMBERS, is now manager of the air-conditioning division of Frigidaire Corp. at Dayton. Others have become branch managers in various parts of the country.

If you would be successful, young man, work for W. O. WALDSMITH!

As in every other town we visited, Frigidaire business in St. Louis is booming. Best volume—both units and dollars—on the new Super Series.

Commercial best in years, and should get better as brewers like Anheuser-Busch are able to step up production and supply all the new outlets that are clamoring for beer. Expect to replace ice coolers for beer, too, after comparative cost figures can be developed, and after retailers are convinced that their beer business will be steady enough to justify a new investment.

James & Co. Exuberant

If you want to sun-bathe your mind in an atmosphere of joy and good cheer, just hie yourselves to the offices housing the organization of James & Co., General Electric distributor in St. Louis, on an upper floor of an office building in St. Louis (took us 28 minutes by the clock to locate it).

There you'll find L. D. JAMES and his two harness mates, Messrs. HUGHES and BILL BURTON—knifing through their day's work with all the zest of three healthy and hungry harvest hands sitting down before a country dinner.

In common with a lot of other distributors, they didn't have to sit up nights taking care of orders last year. And, like almost everybody else, they were stymied at the start of 1933 by the weather plus the bank moratorium.

But you should see them now! May, 1933, will be one of the best months of their history. It will easily double May, 1932, in unit sales, and perhaps in dollar volume, too. And they are confidently expecting the season to extend well into the summer. Their new building, which will be a peach-erino, is proceeding apace.

Where are they getting their busi-

ness? From the sale of Monitor Top refrigerators. Now and then one of the cheaper Junior (flat-topped) models is picked up by a customer, but not often. Nor are they selling many ranges. And practically no laundry equipment at all! It's the refrigeration business that's good.

There may be a general upturn in the swing; but if so, it hasn't been reflected in their sale of other appliances. Not that they haven't tried. They've hired the best (so they believe) washing machine merchandisers in St. Louis, for instance. But little luck has followed their efforts.

Slowness of stock movement in their companion merchandise fails to mar their jubilant spirits, however. They're refrigeration men, and they're selling refrigerators. So they're happy.

Commercial refrigeration, they find, is looking up for the first time since they've had the franchise (the James & Co. territory extends well into Illinois). Beer is helping, and so is the new General Electric line, which is now as complete as they could ask.

Concerning Mr. James we have dated at considerable length many times previously on this page. He is, we still aver, one of Nature's Noblemen—fine, straight, upstanding, clear, forceful, and as square as they come.

Somehow you'd expect to find associated with him a pair of first-raters like Burton and Hughes. Burton is a fighter—helped Mr. James lick the Laclede Gas & Electric Co. into abandoning its aggressive merchandising policy.

Mr. Hughes, who is entrusted with considerable authority, has two passions: the Quinn-Zimmerman team (for whom he bespeaks boundless loyalty), and the all-electric kitchen (which he thinks is the biggest opportunity of all time).

He believes, as do a great many of us, that the all-electric kitchen needs the touch of a good stylist. It needs

to be unified and more definitely interrelated and dovetailed in appearance, he thinks. And perhaps he's right.

Serval-Electrolux Retail Store

Both Serval and Electrolux refrigerators are now being sold in St. Louis by a factory-operated branch, or "store," as they choose to call it.

Manager J. G. TETER avers that his chief trouble at the moment is getting merchandise. He can sell as many as he can get. The new air-cooled Electrolux, he believes, is a winner.

For a little more than a year this store has had the St. Louis territory under its control. And, although some 850 Electrolux have been installed during that time, this spring has afforded the sales crew its first real chance to get going.

The retail store on Pine Street has a large display of all types of Serval and Electrolux models, and when we were there three salesmen had as many prospects seated in front of refrigerators they were demonstrating.

Comfortable Reptiles

GLENN C. HILL, JR., manager of Oil Heat, Inc., St. Louis Williams Oil-O-Matic dealer, reported that an Oil-O-Matic water heater had been installed recently in the reptile house of the St. Louis Zoological Gardens.

From George Vierheller, director of the gardens, John E. Wallace, architect, and R. Marlin Perkins, curator of reptiles, the following serpentine facts were gleaned:

Over 700 specimens of reptile and fish are lodged in the reptile house. All of them come from temperate or tropical regions of the world—desert regions, lakes and rivers of Brazil, dry hills of Australia, and rain-forests of the Malay. These cold-blooded

creatures have to live where it is warm because there is no mechanism in their bodies to generate heat.

To keep its citizens in good health, weather conditions in the house are varied to match the different natural backgrounds. A snake from the Sahara is comfortably cared for in a dry cage with a floor covering of loose, deep sand; while a rain-forest reptile is more at home in a cage having a tree and a floor of absorbent, humus-like material.

Alone of the fish family, electric eels have the ability to discharge electric shocks, stunning the fish upon which they prey. After letting an electric eel discharge its shock against his hand, Mr. Perkins estimated the electrical discharge to be about 110 volts.

These eels must be kept in lukewarm water at about 80° F. They shed their skins constantly, and the cast-off skins float in the water as a fine film, necessitating daily drainage and refilling of the tank.

In all other tanks and pools as well, the cold tap water must be heated to varying degrees of warmth, especially in the winter time.

"With the 24-ft. Reticulated Python, 'Mac,' coming from hot Malay," states Mr. Perkins, "it is necessary to raise the water in his pool to a temperature of about 75°. Did we not give him warm water in his pool he might crawl into the pool soon after refilling, get chilled, develop a cold, and possibly pneumonia. He is far too valuable a specimen to take that chance with."

Engineers estimated that hot water requirements of the reptile house made necessary a 450-gal. tank. A horizontally insulated tank was accordingly put in, and hooked up with the Williams water heater. This equipment, with an oil-storage tank, comprises the hot water system.

Seven hours are required to raise the temperature in the tank from 50° to 200°.

The SHELVADOR

U. S. PATENT 1898922

An Electric Refrigerator with Shelves in the door for eggs, butter, bacon, and other small articles

\$89⁵⁰

DELIVERED
INSTALLED
ONE YEAR
FREE
SERVICE

An exclusive patented feature found only in the New

CROSELEY
Electric
REFRIGERATOR

Just open the door . . . and THERE it is! Here in a nutshell you have the newest and most important improvement in refrigerator cabinet design since the invention of the ice box. Now . . . no more reaching . . . no more searching for the little things that, in ordinary refrigerators, are so hard to find! No more disarranging of everything . . . no more sleeves dragged through butter . . . no more foods leaking through the shelves. Think of the time saved . . . think of the increased "usable" capacity of the New Crosley Electric Refrigerators with Shelvador. Shelvador actually gives the Crosley Electric Refrigerators greater capacity than their ratings indicate by increasing their "usable" capacity. Try to put everything that goes into Shelvador on the shelves of an ordinary refrigerator, and you'll be amazed. An orange takes as much "shelf room" in the ordinary refrigerator as a bottle of milk. In the Shelvador it takes only the space of an orange.

Only Crosley Electric Refrigerators can use the Shelvador, for it is an exclusive patented Crosley feature. For anyone to buy a refrigerator without Shelvador is to deny himself a great convenience and time saver as well as to buy something already outdated. When people see it they quickly realize that they ought to replace their present refrigerator.

The added convenience of Shelvador costs nothing. Even if the New Crosley Electric Refrigerators did not have this feature, they would still be the world's outstanding refrigerator values at the new low prices. With Shelvador, Crosley Electric Refrigerators go so far beyond ordinary values that there is nothing with which to compare them. They are famous for trouble-free operation, quietness and convenience.

Three sizes to meet every home requirement . . . each size with more "usable" space because of Shelvador. And remember . . . insulation is not sacrificed in the Shelvador . . . the exterior of the door is extended to permit the use of a standard thickness of insulation.

See your Crosley distributor. Examine the Shelvador. Instantly you will see its advantages. Instantly you will realize why the New Crosley Electric Refrigerators are sweeping competition before them.



Model D-35
(Illustrated above)

3½ cubic feet NET capacity; 8 square feet of shelf space. (N. E. M. A. rating.) Has two ice trays, each tray with a capacity of 21 ice cubes—42 cubes in all. Additional space provided for an extra single tray or double depth tray. 3 inches of insulation at top, sides, bottom and door. Dimensions: 50½" high, 23½" wide, 24" deep.

Model D-45
(Not illustrated)

4½ cubic feet NET capacity; 10.6 square feet of shelf space. (N. E. M. A. rating.) Has three ice trays, each tray with a capacity of 21 cubes, 63 cubes in all. Additional space provided for an extra single tray or double depth tray. 3 inches of insulation at top, sides, bottom and door. Dimensions: 56½" high, 23½" wide, 24" deep . . .

\$99.50

Model D-60
(Not illustrated)

6 cubic feet NET capacity; 11.5 square feet of shelf space. (N. E. M. A. rating.) Has three standard size ice trays, each tray with a capacity of 21 ice cubes, 63 cubes in all, and one double depth tray, which is very desirable for freezing meats. 3½ inches of insulation at top, sides, bottom and door. Dimensions: 57½" high, 29½" wide, 25½" deep.

\$130.00

Remember the inside of the Shelvador is recessed to provide for the shelves. The exterior of the door is bulged outward actually improving the appearance of the refrigerator and providing space for even more insulation than in ordinary doors.

ALL PRICES INCLUDE DELIVERY..INSTALLATION..ONE YEAR FREE SERVICE

Montana, Wyoming, Colorado, New Mexico and west, prices slightly higher
The Crosley Radio Corporation - Cincinnati
POWEL CROSELEY Jr., President. Home of "the Nation's Station"—WLW

CROSELEY Electric REFRIGERATOR WITH SHELVADOR

DO YOU WANT AN ELECTRIC REFRIGERATION TRADE ASSOCIATION?

The Administration's National Recovery Bill under the direction of Senator Wagner seems assured of enactment early in June.

The Electric Refrigeration industry is totally unprepared and unorganized to function under this law. The industry is in a high state of economic demoralization. Its development in manufacturing has been costly and unprofitable. Its distribution system is strewn with financial wreckage in every community. The time has come to make this giant industry life-sustaining and profitable for the great capital and many thousands employed in it.

Electric Refrigeration must be divorced from all alien predominant influences and be organized and operated as a great individual industry, without subordination to any other!

There are big and little companies in the field. The industry can and must contain and sustain both without discrimination. There must be a place in the sun for all without favoritism, inequalities and injustice!

We call on all Electric Refrigerator complete unit machinery manufacturers to join in a movement to form a Trade Association of Electric Refrigeration Manufacturers to constitute with governmental approval ways and means through cooperation to serve the welfare of the people and capital engaged in it. Prompt action is imperative!

If you desire to join in such a movement, we suggest you communicate with Electric Refrigeration News and request a meeting of single representatives from each manufacturer in Detroit not later than June 5th.

MERCHANT & EVANS COMPANY,
THOMAS EVANS, President.

ELECTRIC REFRIGERATION NEWS

The Newspaper of the Industry

Published Every Week by

BUSINESS NEWS PUBLISHING CO.

Also publishers of REFRIGERATED FOOD NEWS (monthly) and REFRIGERATION DIRECTORY and MARKET DATA BOOK (annual) 550 Maccabees Building, Woodward Ave. and Putnam St. Detroit, Michigan. Telephones: Columbia 4242-4243-4244-4245

Subscription Rates:

U. S. and Possessions and countries in Pan-American Postal Union: \$3.00 per year; 2 years for \$5.00
Canada: \$6.00 per year (U. S. Money)
All Other Countries: \$5.00 per year
Advertising Rates on Request

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Member, Audit Bureau of Circulations
Member, Associated Business Papers
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VOL. 9, NO. 4, SERIAL NO. 218, MAY 24, 1933

EDITORIAL AIMS

- To encourage the development of the art.
- To promote ethical practices in the business.
- To foster friendly relations throughout the industry.
- To provide a clearing house for new methods and ideas.
- To broadcast the technical, commercial and personal news of the field.

Good News

GOOD NEWS from the firing line of the refrigeration industry has been brought back to the office of ELECTRIC REFRIGERATION NEWS by every member of the staff during the last month.

Electric refrigeration equipment—including both household and commercial—is selling and selling fast, according to dealers, distributors, and manufacturers in various parts of the country, as interviewed by F. M. Cockrell, H. W. Mateer, John T. Schaefer, Phil B. Redeker, Elston D. Herron, and the editor. The entire staff of the News has been on the road during a large portion of the last few weeks, and almost without exception the members of the industry they have seen have reported exceptionally good business.

A digest of the facts learned from these personal investigations might run somewhat as follows:

Business Better Than Expected

1. After a slow start, orders have come in with a rush so great that many dealers are ahead of their marks for the comparable period of 1932. Cold weather retarded sales at first. So did the bank holiday. But after the banks reopened, a general buying rush began. It's still going on.

2. Business is better than anybody expected it to be. Chief complaint of dealers today is that they can't get shipments. Plenty of dealers maintain that they could sell all the factory could ship them, and some are almost bitter over their inability to replenish their stocks. Many manufacturers seem to have underestimated the potential market for 1933, and failed to order sufficient parts and raw materials; hence they are experiencing difficulty in getting these. Dealers missed the mark with their guesses, also; and ordered too cautiously. Now they wish they had greatly increased their initial orders and estimates. At all factories, men are being put back to work, and schedules are being revised and revised again—upward.

Public Acceptance 'As Advertised'

3. All the surveys which indicated remarkable public acceptance of electric refrigeration are proving true. It is interesting to note that while dealers are doing an excellent electric refrigeration business, their sales of other appliances are not showing nearly so great an upturn. The surveys released last fall and winter which indicated that "the next major purchase of a majority of American families will be an electric refrigerator" were apparently right. Cumulative effect of years of heavy promotional effort seems to be

especially evident just now. A remarkable number of sales have been made on the first call this spring.

4. Old, established, experienced dealers are getting the business. Very few dealers have been encountered who are in the business for the first time this year. It would seem that the various territories have been well combed by field representatives, and the most capable merchandisers have been selected and trained. Dealers may switch franchises, but the successful ones have cut their refrigeration eye-teeth some time ago. Dealerships which are well organized are all set to make a quick clean-up of "hot" prospects, and to take care of the walk-in trade in an adequate fashion.

Cash Sales Numerous

5. Financing difficulties are not so pressing this year. Last year the plaint was: "We might be able to sell refrigerators if we could finance the time payments." This year it's: "We could sell 'em if we could get 'em." Amazing are the reports of the unprecedented number of refrigerators sold for cash, especially after the bank holiday. In some cities the finance companies are offering a bonus to salesmen for getting time-paper-contract orders.

6. Dealers getting the most business are those waging the strongest advertising and sales promotion campaigns. The best dealers in practically every city were those using the factory promotional materials, as well as special local advertising and publicity stunts devised by members of their own organizations.

Selling to Lower Income Groups

7. Lower income groups are providing the biggest market. Policemen, firemen, school teachers (but not in Chicago!), clerks, and all types of job-holders in the \$1,500 to \$2,000 class are buying refrigerators this year.

8. Beer has opened up a big market for commercial refrigeration equipment already, but the heaviest volume of sales in this field is yet to come. Retailers of beer have been to a large extent skeptical of its continued popularity, and have been installing only temporary and make-shift equipment. Commercial distributors declare that by midsummer, when they will have had a chance to compile comparative figures on the costs of cooling beer by ice and mechanically, sales of beer-cooling equipment should jump considerably. A big educational job needs to be done in this field.

Specialty Selling Still Paramount

9. Specialty selling organizations are getting the best results. The big merchandising outlet, the "key dealer," isn't so prominent this year as in the past. Public utilities are withdrawing rapidly from merchandising activities; and those which still maintain appliance sales departments are following non-aggressive policies. Department stores are cutting prices lower and lower (\$69.50, \$49.50, and even \$39.50 prices are being advertised), but don't seem to be drawing either the trade or the attention they were getting last year. It's the specialty selling organizations, the companies with salesmen out talking to prospects in their homes, which are chalking up the sales increases this spring.

10. Cooperation is the order of the day. Dealers are becoming increasingly conscious of the value of dealers' associations formed to study merchandising problems, sales methods, and to promote refrigeration sales cooperatively in their respective communities. They seem to be working together better and with less friction than they have at any time in the last several years.

Industry in Healthy Condition

It may be that the above observations may not check with the records of some individual companies. But they were drawn from a study of the businesses of a number and variety of representative dealers in various sections of the country. And their uniformly bright tone suggests that the industry is probably in a healthy condition today.

Organizations which can move swiftly enough to take advantage of this fortunate situation should profit measurably in 1933.

LETTERS

All-Industry Conference

Copeland Sales Co.
Mt. Clemens, Mich.

May 16, 1933.

Editor:

I have read with a great deal of interest the editorial on page 10 of the May 3 issue of ELECTRIC REFRIGERATION NEWS.

You advocate the desirability of having an all-industry conference. I certainly am in sympathy with the broad outlines of this picture. I would like to see an association which would have for its main objective the various things which you discuss in your editorial and which would stage, at least once a year, an exclusive refrigeration show at some strategic point in the country.

I don't think it is necessary to have a very formal organization, and I don't think it would be wise to have membership in such an organization a particularly expensive proposition or one which would necessitate the devoting of very much time of factory executives to the organization. As to whether or not the frills of trade associations could be eliminated and some semblance of solidarity on the part of the various manufacturers still preserved, is, of course, a moot question.

It seems to me personally that the main thing to be gained in an organization of this sort would be the benefits derived from a general showing of the products and also an interchange of information regarding plans and policies which might be helpful.

C. W. HADDEN,
Sales manager.

Concur with Ideas

United States Radio & Television Corp.
Marion, Ind.

Editor:

In answer to your editorial entitled "An All-Industry Conference."

We concur with your ideas, and believe them timely with the aims and policies of the administration at Washington.

T. C. WHITEHEAD.

'Getting Mr. Stevens Straightened Out'

Grunow Corp.
4127-4153 George St., Chicago
May 13, 1933.

Editor:

I read with interest the letter from Mr. George T. Stevens, Jr., in your issue of May 10.

As a matter of setting Mr. Stevens straight on some points in which he seems to be in doubt, be kind enough to inform him as follows: I believe loyalty is one of the paramount things in business, and as Mr. Grunow is a true genius, a gentleman, and one of the fairest and kindest men I have ever known, it is a pleasure to work for him, regardless of the monetary consideration. As a matter of fact, even that is away and above what the average company offers.

So far as SO₂ is concerned, the fact that it is in molasses means nothing; and it means nothing in comparison with the amount of it contained in an electric refrigerator. When a baby slaps you in the face you can laugh at it, but when Jack Dempsey delivers a wallop, you duck. If Mr. Stevens wants to monkey around with SO₂ he is welcome to do so. Personally, I stay away from it as far as possible.

You might tell Mr. Stevens that after more than three years now in the refrigeration business, being humble, I don't claim to know much about it—just a little.

If the gentleman would care to pay us a visit, we would be very happy to see him and let him make all the tests we claim, with our refrigerant and our mechanism. I am sure he would go away delighted and thoroughly sold on our product. I know Mr. Stevens has heard of horses and buggies, and of how disappointed and angry some folks were when "gasoline wagons" came into use; but I know he realizes you cannot stop progress and surely—"It's Time American Knew What's Inside An Electric Refrigerator."

DUANE WANAMAKER,
Advertising director.

In Re: Ice Industry

San Diego County Electric
Refrigeration Bureau
San Diego, Cal.

Editor:

Unofficially, sales figures gathered from time to time have shown that our volume so far in 1933 is ahead of the 1932 figures, with indications pointing to further betterment as the summer approaches.

To be without merchandise, in the face of definite orders, is almost as bad as having plenty on hand and no sales in sight, although generally speaking, this situation indicates healthy business conditions.

Several of our factories have actually been unable to supply the demand for certain models, even though employment schedules at the plants have been stepped up to the point where several are now working three shifts a day—something we haven't seen in a long time.

This unusual production activity, wherever it is in effect, not only denotes accelerated demand for the products of the industry beyond expectations, but it means that the over-supply of last year's stock is completely gone in many instances—surely a blessing to all concerned.

It may be embarrassing continually to promise delivery on models you are unable to get, but after all, it is an experience most folks haven't had in some time, and so should be thoroughly enjoyed.

Without due consideration, we are likely to assume that the rapid advance of electric refrigeration has left the ice industry demoralized and beaten, struggling for the crumbs that may remain in the wake of our advancing army of salesmen.

In our vicinity, however, this is scarcely the case, and those who so believe would do well to recognize the steps the ice organizations have taken to protect their positions, for these things are largely constructive, and so will eventually prove of value to our industry.

Time was when the ice people didn't feel it necessary to keep from making a mess in bringing ice, but things are different now. In point of appearance, cleanliness and service, the ice man of today bears no resemblance to the one we once knew—a change made necessary in defense against our sales methods.

And as for advertising, who, in the old days ever heard of such copy as we frequently see in the papers? As a matter of fact, ice concerns didn't advertise at one time, and even if we don't like their copy any better than they like ours, we are pleased that it brings results to both industries.

Thousands of families in this territory have never used any refrigeration, not even ice, and the advertising referred to convinces many of these people that they need some method of food preservation other than the infamous California cooler.

After having shown such people how much better ice is than no refrigeration at all, it becomes a much easier job to sell the idea of electric refrigeration than it would have been at first.

Thus the ice company profits and so do we, but when the cooler prospects run out, our friends in the ice industry will need to worry. That's something else, however, and judging from the many thousands who use no refrigeration at all, the ice companies will be with us for some time, at least.

All ice concerns now sell ice boxes, and according to a confidential report recently secured, some 800 new boxes were sold in this county by the several companies last year.

This rather surprising total was made possible by means of rolling displays, coupled with an intensive campaign carried on by delivery men throughout the field.

Manufacturers of ice boxes have helped ice companies in this work by improving the quality and appearance of their products, and by demonstrating that rolling displays bring dividends.

This particular point was well illustrated by the visit here last week of a traveling display operated by a Middlewest manufacturer.

In an Aerocar of gleaming white, similar to those used by G. E. in their traveling kitchens, a complete display of various ice box models, many in porcelain, is carried direct to the doors of ice concerns engaged in selling boxes.

These things denote progress worthy of observation and commendation, indicating that the ice industry has not admitted defeat, but in carrying on what must eventually be a losing fight, is actually aiding the sale of electric refrigeration.

From our standpoint, it is a matter of sincere regret that local ice interests (as evidenced by a recent interview with the head of one of the largest concerns) seem to feel bitterness toward those in our industry, for obviously the march of electric refrigeration is not to be stopped, and bitterness doesn't bring profit.

J. CLARK CHAMBERLAIN,
Secretary-Manager.

Aids Plans in Brazil

The Brazilian Enterprises Co.
New York City
May 3, 1933.

Editor:

We are very pleased to notify you that ELECTRIC REFRIGERATION NEWS has helped us immensely in the building up of our plans to manufacture refrigerators in Brazil, and really we don't know how we could have gone ahead so quickly if it were not for a few copies of your News which we found at the New York Public Library.

As our refrigerator business in Brazil will depend entirely upon the American manufacturers of parts, equipment, etc., we will be very thankful if you could help us with your suggestions in connection with this matter.

JAN W. DO RIO.

FIELD REPORTS

BY PHIL B. REDEKER

FORT WAYNE, IND.

Frigidaire Built-to-Order Showroom

C. E. Cromwell Co., Frigidaire distributor, has a new showroom that was seemingly made to order for a refrigerator display. A one-time millinery shop, with a corner location, the sides facing the intersecting streets are of full-length glass, giving passers-by a view of all the merchandise displayed on the floor. A glass-enclosed display island in the doorway provides the perfect setting for the Frigidaire compressor and coil demonstrator, making an effective night display.

Right now the big problem is keeping merchandise on the floor for the passersby to see, as purchasers are cleaning out the floor stocks every couple of days, according to Distributor Cromwell and Retail Sales Manager L. E. Paul.

"We have averaged better than two sales a day so far this month," Mr. Paul relates. "We also did very well the latter part of last month, on one day (April 29) closing eight sales."

Particularly gratifying to the Messrs. Cromwell and Paul is the fact that cash sales are running 40 per cent of the total, and that the majority of models purchased are in the super-series line. Mr. Paul, in addition to his duties as retail sales manager, is the commercial salesman for the Cromwell Co. Proud is he of the fact that his efforts so far this spring have pushed the number of Frigidaire commercial installations (in units) in Ft. Wayne over the 300 mark. He has sold a number of units for beer cooling purposes.

Mr. Paul is also swinging into the air-conditioning season with the intention of pushing sales of such equipment as hard as possible right from the start. He already has three good-sized jobs in view. His major achievement last year in this field was the installation of Frigidaire air-conditioning equipment in the dining rooms of the Hotel Keenan.

In connection with his selling activity on air conditioning, Mr. Paul has the "cold dope" about local conditions of temperature and humidity. He has authoritative records which show that there were 194 days in 1931 in which the temperature went over 70° F. and 187 days in 1932 when the temperature went above that point. The average relative humidity for 1931 (with three readings daily—at 7 a. m., noon, and 7 p. m.) was 69.3 per cent and for 1932, 68 per cent, Mr. Paul's figures show.

But Retail Sales Manager Paul does not confine his practice of using authoritative data to air-conditioning selling. Witness the fact that he purchased a number of extra copies of the household specifications issue of ELECTRIC REFRIGERATION NEWS and the commercial specifications issue of REFRIGERATED FOOD NEWS. Very few copies remain in the office, he says, the customers asking to take them home with them for a more leisurely perusal of the facts about household refrigerators.

That Mr. Paul's statement about using our specifications issue was straight dope was demonstrated the next morning when he was working with a customer, an elderly, well-dressed gentleman, who had been so thoroughly sold on another make that he was doing all the talking and almost appeared to be attempting to unsell the retail sales manager on his own product!

Mr. Paul finally managed to inject a rebuttal here and there, to which objections, the prospect demanded proof. Mr. Paul whipped out the specifications issue of ELECTRIC REFRIGERATION NEWS and after briefly explaining the nature of the publication, pointed to the facts and figures which bore out his statements. The prospect did the listening after that.

Commercial Sales Better

J. L. Forshea, dealer for Servel, is concentrating on the sale of commercial equipment. He states that he has sold a greater number of jobs this year than last, but that the individual sales have been smaller than in previous years.

He has sold five milk-cooling jobs in the past six months, three of them for cash. The farmers who purchased the equipment, he says, literally "dug up" the cash from hiding places about the premises to pay him.

Mr. Forshea believes that the commercial dealer can best promote sales by making an installation of which the owner will be proud. Two of his milk-cooler sales were directly traceable to the "showing off" of an installation which he had made for a neighboring dairy farmer.

Mr. Forshea is truly "a veteran of refrigeration," having been in the industry since he was 12 years of age.

He was at one time superintendent for the Consumers Ice Co. (which operates a number of plants in Indiana and Illinois) and was in charge of the rehabilitation of many of their plants.

When the ice business began to slip he "saw the handwriting on the wall," as he puts it, and left the ice industry to form a dealership for the sale of mechanical equipment. His knowledge of the ice business has helped him immeasurably, he says, in his selling activities. He knows what ice costs, and what it will do and won't do in maintaining temperatures.

He likes nothing better than an opportunity to work with records which show the cost of operation with ice. In one instance, he paid a prospect \$10 for the privilege of inspecting a 21-year record of ice costs—and then sold the prospect by proving to him that he could have purchased and operated mechanical refrigeration during that period, with complete replacement every seven years, for the money he had spent on ice.

Ft. Wayne Sales Hit

Two-a-Day Pace

C. H. Lines Co., distributor for Leonard, was finishing up a busy week Friday morning. According to Mr. C. H. Lines, 10 jobs had been moved through Thursday, and with nice weather in prospect for the week-end (Ft. Wayne hadn't seen the sun for a couple of weeks) it appeared that the total number of sales for the week would be well over the two-a-day measure.

Half of the sales made this spring have been to laborers, Mr. Lines stated, which is an indication of the town's increased industrial activity.

The C. H. Lines Co., although established as an electrical appliance dealer for a number of years, did not take on refrigeration until last year. Last year's results were not very heartening, Mr. Lines pointed out, but starting with April of this year refrigeration sales have risen so rapidly that Mr. Lines believes they will far outstrip all other appliances in both unit and dollar volume of sales.

The proportion of cash to total sales in his operation has increased from 10 per cent in 1932 to 75 per cent in 1933, Mr. Lines stated. Most of the jobs sold this year have been in the 6-cu. ft. size or larger. Mr. Lines attributes this for the most part to the fact that generally the 6-cu. ft. model this year can be purchased for what was asked for a 4-cu. ft. model last year.

Mr. Lines is proud of the fact that fully 50 per cent of his sales have been to old customers—purchasers of other appliances. He would not have entered the refrigeration business if he hadn't felt certain of the support his old customers would give him, Mr. Lines declared.

G. E.'s Used for Bottled Beer

Both household and commercial sales by the E. A. Barnes Co., distributor of General Electric refrigeration products, have been booming since the first of April, declared C. H. Locke, general manager. Sales of household units increased steadily throughout April and reached a high point during the first week of May when 16 units were sold.

Mr. Locke has personally conducted a campaign for beer-cooling installations which has resulted in 15 sales of G. E. commercial equipment for bottled beer (the only kind which Indiana can have at the present, although the Supreme Court is expected to rule out the part of the legislative act which prohibits the sale of draft beer).

A few of the sales have been made in conjunction with G. E. commercial cabinets using conditioned air; in others Mr. Locke has converted the early G. E. square-hole ice cream cabinets into bottle beer coolers.

About 50 per cent of the sales have been made to laborers, principally those who work in the G. E. plant located in Ft. Wayne, Mr. Locke states. Like other retail dealers in Ft. Wayne, Mr. Locke is cheered by reports of an increase of employment in the G. E. plant, the International Harvester Co.'s plant, and the activity manifested at the Berghoff brewery.

Mr. Locke finds that salesmen constitute good prospects. Three of the 16 sales made during the first part of May were "traveling men." About half of the sales, manager Locke states, have been for cash.

Barth Does Good Job of Filling Refrigerator

At the Barth Electric Co., W. J. Barth, president, was busily engaged in fixing up a window display. He was filling up a cabinet with imitation foods, and before he left he had his refrigerator stocked in a way that would have been a delight to any housewife.

The Barth Co. handles Crosley and

Majestic refrigerators, and has moved them at the rate of one a day since the middle of April, Mr. Barth declares. This is a considerably better showing than was made during the same period last year, although weather conditions have been very poor.

Mr. Barth reports that while many of the prospects are shoppers, a great many sales have been closed on first interview. Prospects seem to ask the most questions about features of cabinet construction, and guarantees, Mr. Barth declares. Shop owners in the surrounding territory, office workers, and some professional men have been buying refrigerators this spring, Mr. Barth states.

Majestic Factory News

At breakfast in the coffee shop of the Hotel Indiana we spotted a gentleman who was intently reading a publication which appeared to be a copy of ELECTRIC REFRIGERATION NEWS.

Passing his table on my way out, we saw that it was a copy of E. R. N. The gentleman was F. H. Osborne of the engineering department of Grigsby-Grunow Co., manufacturer of Majestic refrigerators.

The production schedule on Majestic refrigerators, Mr. Osborne averred, has been doubled three times in the last few months.

Recently the production schedule for the 3.5-cu. ft. model was set on one day, doubled the next. This model is enjoying widespread acceptance for apartment house installations, Mr. Osborne declares.

Trucks 'em Home

When the weather warmed up and the refrigeration business in Lynchburg, Va., began to break down during the last week in April, Frank Silver, Copeland dealer, decided that he needed a lot of refrigerators, and needed 'em in a hurry.

Silver decided he couldn't wait for a

shipment by freight, so he called the Copeland factory in Mt. Clemens and asked the officials if he could come and get a load of refrigerators. He was told he might come after the refrigerators.

So the Copeland dealer said "come on" to his truck driver, jumped in his automobile and accompanied by the truck, drove to Mt. Clemens—a distance of 700 miles, to get the refrigerators.

Practically all of the 20 refrigeration systems Silver took back with him were already sold, he explained to the factory officials, and he wanted the others to place in a show which was starting that week-end.

Another good reason for his quick trip to the factory, Silver said, was the fact that deliveries of refrigerators to competitors was slow and he felt that he could "get the jump" on other dealers by getting the merchandise as he did.

Incidentally, Dealer Silver's return trip to Lynchburg carried advertising for Copeland through four states, as the truck is equipped with huge banners which bear the legend "Copeland Refrigerators from Mt. Clemens, Mich., to Lynchburg, Va."

"In Lynchburg," Silver declared, "people are buying. There is a definite comeback in the retail business." He said he looks for 1933 to be the biggest year for electric refrigeration in his experience as a dealer.

While at the factory, Dealer Silver ordered a carload more of Copelands for shipment during the early part of May.

Speedy Shipment

Another Copeland dealer, Harry Lippke of Newark, N. J., visited the local factory the day after Silver arrived, and insisted upon speedy shipment of refrigerators to fill urgent demands of customers.

"Business is so good you wouldn't believe it," he declared.

DEPT. STORE SELLS 652 UNITS IN 3 DAYS

PHILADELPHIA—Specializing on the new meter purchase plan, Gimbel Brothers, Philadelphia department store, established a record of 652 Kelvinator household sales on Monday, Tuesday, and Wednesday, May 15, 16, and 17.

Monday's sales were 251 models, followed by 137 sales on Tuesday which was a rainy day. On Wednesday the sale of 264 Kelvinators boosted the three-day total to its record breaking mark.

An advertising campaign in the Philadelphia newspapers featuring the 15-cents-a-day "meterator" purchase plan which Kelvinator has developed for department store outlets, was used to attract prospects.

Raymond Rosen Co., Philadelphia Kelvinator distributor, has placed Kelvinator in several of the leading department stores and furniture stores of the city.

3 Distributors Added By Stewart-Warner

CHICAGO—Stewart-Warner Corp. has added The Davidson Co., Des Moines, Iowa; Dix Bowers Co., Norfolk, Va.; and Carolina Wholesale Co., Columbia, S. C., to its list of refrigeration distributors, according to C. W. Strawn, sales manager of the refrigerator division.

GLEN FALLS, N. Y., DEALER OPENS DE LUXE STORE

GLEN FALLS, N. Y.—Griffin Lumbar Co., G. E. dealer, recently held the formal opening of its de luxe specialty appliance store on Bank Sq., in the heart of the business district here.

A FACT THAT 10 YEARS IN THE REFRIGERATION INDUSTRY HAS TAUGHT US

Operating COSTS

There is no mystery about operating costs in electrical refrigeration. To generate so much refrigeration requires the elimination of so much heat. This in turn requires so much power. No miracle of engineering can alter the fixed laws that govern this situation. Our own operating costs are as low as it is scientifically possible to make them.

UNIVERSAL COOLER CORPORATION
DETROIT, MICHIGAN BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION EQUIPMENT

OWENS-ILLINOIS TO ERECT GLASS HOUSE

CHICAGO—Owens-Illinois Glass Co. of Toledo is erecting for A Century of Progress exposition here a structure composed entirely of glass building blocks which the company has begun to manufacture. Walls of the building are placed at angles to show each of the vari-colored blocks to best advantage.

The structure is 100 ft. long and 60 ft. wide, and is surmounted by a tower 50 ft. high.

Glass blocks used in its walls run the gamut of the spectrum, reds blending into oranges, oranges into yellows, yellows into greens and on through the whole range to the delicate blues.

Some of the glass blocks take their tint from glass color fused to their surfaces, another type from the cement paint of various shades applied to give the mortar proper suction and bond to the block.

With walls built entirely of glass block, the only added decorative features being glass tile, the glass wool roof insulation, the cast glass pillars up the front of the tower, and the aluminum doors and canopies.

Westinghouse Plans Aurora Borealis

CHICAGO—World's Fair exhibit of Westinghouse products will display an array of moving, colored lights which will simulate the Aurora Borealis of the North.

Amber, green, red, blue, and white light will be incorporated into the exhibit in such a way that the lighting effects possible through various combinations have no conceivable limit, Westinghouse engineers say.

The structure will stand 70 ft. high in the Electrical building at the Century of Progress. A balcony 12 ft. high will serve as a canopy for the main display on the ground floor.

On the facade of the balcony will appear a unique sign of the single word, "Westinghouse" done in sheet metal letters. Colored lights located below will illuminate the sign in such a way as to make the letters appear to change constantly.

Along the top of the balcony a promenade, 15 ft. wide and running for the full 156 ft. of the exhibit, will show a secondary display of Westinghouse products.

Extending above the balcony to the uppermost part of the exhibit structure will be a massive facade on

which will play colored lights.

A feature of this towering facade is columns of semi-circular discs, each a wheel of light. They are 10 ft. in diameter, 8 in. thick, and are 4 ft. apart, numbering 11 in each column. Eight of these columns of light, 23 ft. apart, will stretch along the full length of the promenade.

There will be floodlighting underneath each disc and for the bare facades between the columns.

Color effects for the exhibit will form nine major scenes and will be arranged to blend automatically from one into the other over a period of several minutes.

A.T. & T. to Show How Telephone Works

CHICAGO—All the intricacies of modern telephone systems will be shown and explained in the exhibit to be sponsored by the American Telephone and Telegraph Co. at A Century of Progress this summer.

Demonstrations will show how speech is inverted so as to be unintelligible when received over ordinary radio, how privacy is obtained in radio telephony, and how automatic devices make connections between dial telephones.

CENTURY OF PROGRESS

Rector & Gypsies to Act For A. & P.

CHICAGO—Now under construction for the Atlantic & Pacific Tea Co.'s exhibit at the World's Fair is a board walk along the edge of Lake Michigan, an amphitheater seating 2,000 persons, and a revolving stage just off the board walk.

On the company's entertainment program will be the A & P Gypsies, radio stars, and George Rector, famous restaurateur.

MINIATURE HOOVER DAM

CHICAGO—To be exhibited by the U. S. Department of Interior's bureau of reclamation at A Century of Progress will be a miniature of the Hoover Dam and power plant. Rushing water will keep the reservoir filled.

G. E. BUILDS 'HOUSE OF MAGIC' AT FAIR

CHICAGO—Story to be told by displays in the General Electric Co.'s "House of Magic" at A Century of Progress in Chicago will show the strides that have taken place in electrical development during recent years.

In a little auditorium seating approximately 300 persons, General Electric will present lighting effects which are representative of the newest developments in theatrical illumination. A wave of a wand will open the exits. Pushing of a tiny button will bring into sight a tiny Thyatron organ no bigger than a toy piano but capable of producing the sound volume of a mighty pipe organ.

The auditorium will be completely air conditioned. Lighting effects of the auditorium and the demonstration will be produced by combinations of gaseous and incandescent lamps.

The demonstration platform, a circular turntable, will revolve at the push of a button, thereby permitting the rapid changes of settings necessary to keep the show moving at a fast pace.

William A. Gluesing, in charge of the "House of Magic" show, states that there will be a continuous performance, an all-day series of 30-minute shows consisting of six or more short acts.

Star performers will be high-frequency coils, phototubes, amplifiers, stroboscope, cathode-ray oscillograph, and ultra-violet.

Phototubes will be called into service to sort out black and white balls as they roll down a chute, to start machinery, to clear smoke out of a glass chimney, to count objects going in one or both directions, to count the flickers in the radiation of an incandescent lamp (which the human eye is not able to detect), and to pick up music being carried through the air on a beam of light.

The cathode-ray oscillograph will give the audience an opportunity to see what sound looks like, while at the same time it may hear what the jagged line sounds like.

A fever machine, Geiger counter, and dental x-ray will be put through their paces for the education and entertainment of visitors.

MUSHROOM LUMINAIRES TO LIGHT PATHS AT NIGHT

CHICAGO—Visitors at A Century of Progress will walk about in a colored lights created by new "mushroom luminaires."

More than 2,000 of the new units are being built in the Cleveland lighting division of Westinghouse Electric & Mfg. Co.

The "mushroom" luminaire consists of a short aluminum stem on which is mounted an inverted cone of translucent Micarta. Concealed under the cone is a set of refracting prisms surrounding an electric lamp.

Height from the ground to the lower edge of the Micarta cone is 45 in. and the cone is 30 in. in diameter.

Light directed by the refracting prisms to the grass and pathways will be ordinary clear light, while that transmitted to the eye from the cones will be of low intensity in glowing colors.

The "mushrooms" will be spaced approximately 80 ft. apart and the sensation of walking about in a aura of color emanating from sources close to the ground, will be unusual.

Lighting effects for the Chicago Century of Progress are being designed and constructed by the Westinghouse Electric & Mfg. Co. and the General Electric Co., under supervision of a joint committee headed by D'Arcy Ryan.

UNDERWATER EXHIBIT SHOWS DIAMOND MINING

CHICAGO—Workmen at the World's Fair grounds in Chicago are now constructing a full-sized mine below the level of Lake Michigan in which Fair visitors will see the processes involved in taking diamonds from the earth.

The mine will form a part of the exhibit to be sponsored by the Diamond Corp. of London, the Societe Internationale Forestiere et Miniere du Congo, the Amsterdam and Antwerp cutters, L. M. Van Moppes & Sons, the New York diamond interests, and C. D. Peacock, Inc.

Displays of this group of exhibitors will tell the story of diamonds from their geologic origin to their final use as industrial and ornamental stones.

Manufacturers of Beer Cooling and Handling Equipment

Over 13,000
Distribution

reaching

Hotels

Restaurants

Clubs

Groceries

Delicatessens

Hotel Supply
Houses

Commercial
Refrigeration
Distributors &
Dealers

IN the June and July issues of Refrigerated Food News you have an opportunity to reach the cream of your immediate market for mechanical beer-cooling equipment.

Hotels, large restaurants, clubs, groceries, and delicatessens are ready to buy your equipment. They all want to know who makes it, how it works, and who is using it now.

The June and July issues of Refrigerated Food News will carry a directory listing of beer-cooling equipment manufacturers and installation articles showing these 13,000 prospects of yours how others are using your equipment.

These two important issues of Refrigerated Food News offer you the unusual opportunity to present your sales message in a background of educational information on the application of mechanical refrigeration to beer cooling—all of which means reader interest that will produce quick results.

Write today for further information and rates.
Advertising forms for the June issue close June 8.

REFRIGERATED FOOD NEWS

550 MACCABEES BLDG., DETROIT, MICH

BEER COOLING

RIGHT TEMPERATURE HELPS BEER'S TASTE

DETROIT—Connoisseurs always have known that the good qualities and maximum palatability of beer can only be realized as the result of the most meticulous control of temperature at all stages of production, storage, transportation, and dispensing. Louis Ruthenburg, consultant for the Nema refrigeration division, pointed out in commenting on the growing refrigeration-of-beer business.

"Much progress has been made in the mechanisms and practices of temperature control since the days of the old bar room. Today's beer must be cooled by modern, efficient, economical electric refrigeration just as surely as it must be delivered by motor vehicles, rather than by the clattering and showy, but slow-moving and inefficient horse-drawn trucks of the nineties.

Adopt Improvements

"Because of the vital importance of constant and accurate temperature control, the beer industry always has been quick to adopt improvements in the science of refrigeration, and it is not remarkable that the newly enfranchised dispensaries of the popular beverage, realizing that continued patronage and profit are dependent upon temperature control, are quick to install modern equipment.

"Public opinion varies greatly as to the qualities of the 3.2 brew, albeit that in the 'good old days' this percentage ran from 2.5 upwards. Many are enthusiastic, but there is much grumbling that the new beer is 'flat'; that it does not 'taste right'; that it 'carries no kick.'

'Alley Brew Palates'

"Radio engineers talk of 'radio ear,' which means many person's ears are unable to distinguish pure tones because of their sensitiveness being destroyed by inferior radio sets. Now it is possible that much of this criticism may be due to what might be called 'home or alley brew palates,' which have lost their ability to appreciate the fine delicacies of flavor that appeal to the connoisseurs.

"On the other hand, because of the importance of proper temperature, there can be little doubt that much of this criticism develops as the result of drinking beer that has not been kept or served under the control of effective refrigeration. What is less palatable than warm beer? Only a few degrees change in temperature is sufficient to mean the difference between flat, insipid beer, and beer with a real tang.

"In the old days, how quickly did patronage rush to the few bars where beer was kept at the 'right' temperature as the result of pains to maintain the beverage at the proper temperature in spite of inadequate cooling facilities!

Temperature Control

"Effective temperature control presents somewhat different problems where bottled and draft beer are concerned. Bottled beer is pasteurized and a rise in temperature between brewery and dispensary will not spoil bottled beer. Barreled beer, however, is not so treated and must not be allowed to reach a temperature above 55° F. When subjected to higher temperatures, the carbon dioxide gas is driven off and the beer becomes bitter.

"With bottled beer it is only necessary to chill the bottles to the desired temperature for serving and to maintain the bottles at that temperature subject to the slightest possible variation. Bottle coolers that do not cause the labels to come off the bottles are preferred by most dispensaries.

"Barreled beer usually is delivered at a temperature well under 55° F. The barrels should be stored in a pre-cooler which will prevent a rise in temperature. From the tapped barrel the beer is forced through cooling coils, the temperature of which must be maintained within a narrow range of 2 or 3° to insure greatest palatability."

Copeland Branch to Sell Beer Coolers

NEW YORK CITY—Plans for selling Anheuser-Busch beer-cooling equipment through Copeland Refrigeration Co. of New York, were discussed at a meeting of the distributor's commercial sales force here April 5, according to A. Rosmarin, commercial department manager.

Speakers included K. S. Baxter, president of Copeland Refrigeration Co. of New York; J. B. Breen, manager of the Brooklyn and Long Island commercial division; and Mr. Rosmarin.

G.E. Equipment to Cool Beer at Park

DETROIT—The commercial department of Caswell, Inc., General Electric distributor, has installed equipment for beer-cooling purposes in Eastwood Park (an amusement center), the Warwick Apartments, and Pauline's Dining Room here, according to C. G. Blackburn, commercial manager.

The installation at Eastwood Park is for a beer garden, claimed to be the "world's largest." A G. E. conditioned-air evaporator has been installed in a specially built storage cooler which holds 100 cases of beer and 16 half barrels. A G. E. 1½-hp. compressor serves to refrigerate this job.

The installation for the Warwick

Apartments beer garden consists of a 1-hp. compressor which handles a storage cooler with a capacity of 10 half barrels and 50 cases, cooled by a conditioned-air evaporator; a two-tap beer dispensing unit with sweet water bath; and finned coils in a bottle cooler which is built as a part of the bar.

A Fedder's "Mobile Bar" which employs a "sandwich type coil" draft-beer cooling system has been installed in the beer garden of Pauline's Dining Room. In the kitchen which serves the dining room proper is a 60-cu. ft. self-contained G. E. commercial refrigerator, with conditioned-air evaporator, and installed in the upstairs kitchen which serves the beer garden is a 45-cu. ft. G. E. commercial refrigerator with conditioned air, and a 14-cu. ft. chef's box with a G. E. 12-lb. ice maker. This equipment is handled by a ¾-hp. compressor.

FEDDERS BAR INSTALLED IN PORTO RICO

SAN JUAN, Porto Rico—First installation of a Fedders beer bar in this country has just been completed on the premises of E. J. Noya by the Refrigeration Supply Co. of this city. T. Perez Meri, refrigeration engineer, reports.

BEER COOLER HOOKED UP TO MULTIPLE JOB

CAMBRIDGE, Mass.—Appliance Engineering Co. of Boston, New England distributor for Universal Cooler commercial refrigeration, has installed refrigeration for beer-cooling purposes in the S & S delicatessen of this city, making a multiple hook-up with a display case lowside.

In the installation an 8-ft. display case (in which bottle beer is displayed along with delicatessen items) is duplexed by means of a two-temperature valve to a beer- and water-cooling dispenser especially designed by the Appliance Engineering Co.

This dispenser is equipped with two beer faucets, each of which is connected to a 45-ft. beer coil, submerged in a sweet water bath. The water faucet is also connected to a regular water coil and the inside tank is refrigerated by 25 ft. of ½-in. copper tubing, using the regular multiple expansion valve.

The dispenser has a Monel metal front and drip tray, and is lined with 2-in. corkboard.

The three-faucet beer dispenser and 8-ft. display case are being handled by a ¾-hp. compressor.

Gay Gets Contract For 3 Breweries

LOS ANGELES—Gay Engineering Corp. has been awarded contract for construction and equipping three large breweries on the Pacific coast for Schmidt Brewing Co. which owned and operated six breweries in Montana, Washington, Oregon, and California before prohibition.

The new breweries will be operated in Olympia, Wash.; Salem, Ore.; and Los Angeles.

The Schmidts are joined by the Hagemann interests of San Francisco in the Los Angeles enterprise which is to have a capacity of 100,000 barrels annually and the equipment will cost \$400,000. Hagemann's "Albany" brewery was founded in San Francisco in 1859, while Schmidt's first brewery was built at Butte, Mont., in 1869.

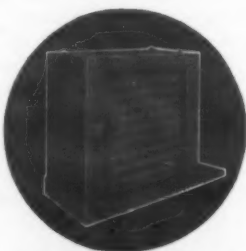
DAYTON FIRM ANNOUNCES NEW BEER PUMP

DAYTON—Moore-Eastwood Mfg. Co. here has started production of a new beer pump, according to H. C. Moore, president and general manager. The pump will handle up to a full barrel of beer.

Beer-cooling for every need

SERVEL, THE LEADER, LEADS AGAIN...

WITH A COMPLETE LINE TO HELP YOU PROFIT FROM A VAST, NEW MARKET



SERVEL HUMIDRAFT Powerful fan-driven chilling unit. For beer storage and keg rooms. Eliminates bunkers and coils. Provides extra storage space.

OVERNIGHT . . . eating and drinking habits change . . . correct chilling and efficient dispensing assume greater importance . . . and out of the legalization of 3.2 per cent brew emerges a big field for refrigeration.

Servel . . . far in advance, as always . . . meets the return of beer with the industry's most complete line of beer-cooling equipment.

Servel . . . drawing upon its decade of manufacturing leadership . . . enables its dealers to meet every requirement of the vast, new market.

Beautiful, compact cabinets—for beer in dry, clean bottles.

Handsome, self-contained bar units—for draft beer.



SERVEL BOTTLE-TYPE COOLER Scientifically designed to chill beer quickly to correct serving temperature. Keeps bottles dry. Occupies minimum floor space; holds 126 pint bottles. Equipped with Humidraft chilling unit and Model 19A machine unit. 27¼" x 26" x 62".



SERVEL DRAFT-TYPE COOLER Finished in lustrous black; aluminum beading. Stainless steel work-board; chromium brass draft arms. Chilling compartments for 2 half-barrels. Also space for 41 pint bottles. Equipped with Model 30D machine unit. 81¼" x 45¼" x 30¾".

Powerful, efficient machine units, coils and the exclusive Humidraft chilling unit—for bars and keg storage rooms.

Now . . . with modern equipment for every beer-cooling need . . . the Servel Commercial line is a sounder business proposition than before.

Now . . . the Servel Commercial line can bring you bigger volume, greater profits.

Investigate the attractive Servel Dealer Franchise for your city. Write today for details.

SERVEL SALES, INC. Evansville, Ind. Manufacturers of a complete line of household and commercial refrigeration

SERVEL

Electric

BEER COOLING EQUIPMENT

253 NEW DEALERS TO SELL LEONARDS

DETROIT—To the field organization of Leonard Refrigerator Co. of Detroit and Grand Rapids, 253 dealers, situated in 34 states, have been recently added, according to R. I. Petrie, general sales manager.

By states, the new dealers are as follows:

Arizona—Glendale Lumber Co., Glendale; O'Malley Lumber Co., Buckeye; and Douglas Furniture & Outfitting Co., Douglas.

Arkansas—J. A. Wright, Pine Bluff; and Hanna & Co., El Dorado.

California—In Los Angeles, Dearden Furniture Co., 712 South Main St.; Lovinger's, 168 North La Brea; Fluey's, 676 S. La Brea; and J. Waadt Electric Co., 4826 South Figueroa St.; W. D. Sharp, Selma; A. E. Feltes, Lindsay; Burnett Furniture Co., 633 University Ave., San Diego; W. D. Hall Co., El Cajon; Coronado Radio & Electric Co., Coronado; Wilson Bros., North Hollywood; Edgar Case, 619 Marin St., Vallejo; Brown Furniture Co., Mill Valley; Jim's Radio Shop, Ocean Beach; Beach City Electric Co., Santa Cruz; and Tunnel Motor Service, Newcastle.

Colorado—Rheff Electric Co., Walker Radio Co., D. Z. Phillips Music Co., Colorado Supply Co., and American Furniture Co., all of Pueblo; and J. J. Steinbaugh, Louisville.

Connecticut—Cannell Radio Service, Waterbury; Anderson Nash Corp., Danbury; Ansonia Furniture Co., Ansonia; J. H. Moran, Wallingford; and Shoor Bros., Inc., 196 Trumbull St., Hartford.

Georgia—Leland L. Loach, LaFayette.

Idaho—Rexburg Mart, Rexburg; Rexburg Mart, St. Anthony; Blackfoot Mercantile Co., Blackfoot; and Emporium, Idaho Falls.

Illinois—In Chicago, Polonia Sewing Machine & Music Co., 1062 Milwaukee Ave.; Straus & Schram, with three stores at 834 West 63rd St., 3313 Lincoln Ave., and 4128 West Madison St.; Guaranteed Electric Shop, 2876 West 22nd St.; National Telegraph Radio Shops, 3405 West Roosevelt Rd.; West Town Radio Co., 4750 West Madison St.; Joe Cicovsky & Sons, 1934 West 51st St.; Glucks Music Shop, 2503 Devon Ave.; and Imperial Utilities Co., 4025 Elston Ave.; Miller Santee Co., 218 North Main St., Rockford; Conrad H. Schadt & Service Ice & Coal Co., East Moline; John Bingham, Rock Island; Penry Furniture Co., Danville; W. A. Grady, Mason City; and Manlove & Wilkenson, 1641 Washington Ave., Alton.

Iowa—Davidson's Bros. Co., Sioux City; J. R. Nicolson, Cherokee; L. B. Mills Co., Webster City; L. L. Smith, Albion; Lowenstein Music Co., Keokuk; Adams & Adams, Davenport; and E. E. Burton Plumbing & Heating Co., Iowa Falls.

Indiana—John V. Rees Sons, Tell City; R. & G. Furniture Co., Evansville; Colonial Sport Shop, 437 State St., Hammond; and Eagle Furniture Co., Lafayette.

Kansas—E. L. Wolfe Plumbing & Heating Co., McPherson; J. N. Day Music Store, Junction City; Horneys Drug Store, Brewster; Lucas Motor Co., Lucas; Achting's Hardware Co., Lawrence; Paul's Furniture Store, Selden; Anderson Hardware Co., Oberlin; McAllister Fitzgerald, Lebo; McCandless Hardware Co., Richmond; and Perry Electric Shop, Burlington.

Kentucky—Harrodsburg Hardware & Implement Co., Harrodsburg; Stewart Dry Goods Co., Fourth and Walnut Sts.,

12 Manufacturers Sell 107,182 Electric Refrigerators In April, 1933; Stocks Lower Than 1932

Reported by Refrigeration Division of National Electrical Manufacturers Association. Member companies: Copeland, Crosley, Frigidaire, General Electric, Gibson, Grigsby-Grunow, Kelvinator, Norge, Servel, Trupar, Universal Cooler, and Westinghouse.

HOUSEHOLD				U. S. A. INVENTORIES			
Laquer (Ext.) Cabinets with Systems				Factory, Branch, and Warehouse		Dealers and Distributors	
Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars
1. Under 4.00 cubic feet.....	1,249	59,521	1,027	1,027	62,004	1,153	60,276
2. 4 to 4.99 cubic feet.....	32,021	1,877,162	19,490	1,496,725	18,640	1,223,846	1,223,846
3. 5 to 5.99 cubic feet.....	9,005	487,475	6,828	522,564	5,514	406,681	406,681
4. 6 to 6.99 cubic feet.....	17,782	1,369,060	17,678	1,971,459	12,938	1,211,439	1,211,439
5. 7 to 7.99 cubic feet.....	6,880	607,906	7,659	691,742	5,108	477,081	477,081
6. 8 to 8.99 cubic feet.....	1,789	182,160	4,175	618,155	3,218	397,889	397,889
7. 10 to 12.99 cubic feet.....	7	7,334	1,972	394,265	623	125,803	125,803
8. 13 to 16.99 cubic feet.....	7	1,714	432	106,067	108	25,918	25,918
9. 17 to 24.00 cubic feet.....	4	1,210	243	70,038	75	21,561	21,561
10. Total Laquer.....	68,774	4,745,942	59,504	5,933,019	47,377	3,949,493	3,949,493
Porcelain (Ext.) Cabinets with Systems				Factory, Branch, and Warehouse		Dealers and Distributors	
Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars
11. Under 4.00 cubic feet.....	209	12,695	472	21,315	326	15,444	15,444
12. 4 to 4.99 cubic feet.....	2,783	210,331	2,655	218,573	2,203	161,034	161,034
13. 5 to 5.99 cubic feet.....	3,567	323,856	682	61,367	2,151	201,364	201,364
14. 6 to 6.99 cubic feet.....	11,903	1,168,906	3,813	433,023	4,992	510,784	510,784
15. 7 to 7.99 cubic feet.....	13,318	1,599,534	4,875	614,363	6,023	722,642	722,642
16. 8 to 8.99 cubic feet.....	3,266	465,498	1,984	280,979	3,298	481,334	481,334
17. 10 to 12.99 cubic feet.....	1,125	167,215	1,773	318,057	961	175,645	175,645
18. 13 to 16.99 cubic feet.....	288	52,398	2,463	510,298	441	89,130	89,130
19. 17 to 24.00 cubic feet.....	23	7,079	199	355,552	228	70,151	70,151
20. Total Porcelain.....	36,462	4,007,512	19,916	2,814,527	20,623	2,427,528	2,427,528
21. Total Lines 10 and 20.....	105,236	8,753,454	79,420	8,747,546	68,000	6,377,021	6,377,021
22. Separate Systems.....	1,483	52,090	1,867	81,713	500	17,550	17,550
23. Separate Household Low Sides.....	443	8,038	2,646	49,265	729	13,790	13,790
24. Total Lines 21, 22, and 23.....	107,162	82,933	82,933	.....	69,229	.....	.....
25. High Sides Under 1/3 hp.....	1,793	67,979	1,527	71,094	326	15,891	15,891
26. Cabinets—No Systems.....	713	24,381	25,104	1,010,989	118	12,791	12,791
27. ....	.....	.....	.....	.....	.....	.....	.....
28. Totals Household.....	.....	8,903,942	.....	9,960,607	.....	8,437,043	8,437,043
COMMERCIAL				Factory, Branch, and Warehouse		Dealers and Distributors	
Quantity	Dollars	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars
29. Water Coolers with High Sides.....	1,375	103,460	10,723	1,093,015	3,675	362,839	362,839
30. Water Coolers with No High Sides.....	418	26,054	1,082	55,616	227	12,119	12,119
31. Ice Cream Cabinets with High Sides.....	658	86,898	4,281	568,946	105	13,398	13,398
32. Ice Cream Cabinets with No High Sides.....	536	88,221	5,023	609,966	259	29,884	29,884
33. Milk Coolers with No High Sides.....	.....	.....	7	1,189	48	8,151	8,151
34. Room Coolers with High Sides.....	.....	.....	3	1,568	1	523	523
35. Room Coolers with No High Sides.....	65	6,430	2,696	245,154	199	19,324	19,324
36. Extra High Sides, 1/3 hp. and Up.....	6,630	649,094	10,041	1,176,406	3,413	422,619	422,619
37. Total Lines 31, 32, 33, 34, and 35.....	8,733	.....	25,048	.....	7,194	.....	.....
38. Extra Commercial Low Sides.....	6,304	180,787	15,041	426,028	4,273	136,223	136,223
39. Miscellaneous Cases and Cabinets.....	60	12,243	.....	342,063	.....	107,882	107,882
40. Beverage Coolers.....	60	5,019	.....	.....	.....	.....	.....
41. Total Commercial.....	.....	1,138,116	.....	4,516,951	.....	1,112,962	1,112,962
42. Totals—Household and Commercial.....	.....	10,042,058	.....	14,516,558	.....	9,550,005	9,550,005

*The total of the figures by sizes and kinds does not agree with the total figure shown, namely, \$14,516,558 because of the failure to supply the detailed information by all companies.

The number of companies reporting inventories at factory branches, and warehouses was 10. The percentage of total sales of these 10 companies was 95.7.

**The number of companies reporting inventories of dealers and distributors was 9. The percentage of total sales of these 9 companies was 89.4.

Louisville: E. L. & A. T. Byron, Owingsville; and E. J. McCoy, Louisville.

Louisiana—Miller Drug Co., Haynesville; and D. H. Holmes Co., Ltd., New Orleans.

Maine—C. F. Harlow, Sanford; Gordon & Lovejoy, Union; and W. H. Wheeler & Son, Oakland.

Maryland—Comprecht & Benesch and Billings Highland Furniture Co., both of Baltimore.

Massachusetts—Kane Furniture Co. and Atkinson Shawmut Co., both of Boston; Richards Furniture Co., Malden; Kane Furniture Co., Malden; Hyde Park, Framingham, Newton, and Cambridge; Friend Lumber Co., Arlington, Lowell, and Medford; Fuller Bros., Foxboro; Protektor Roofing Co., West Springfield; Ray Home Utilities, Greenfield; Collins & Murray, Holyoke; Edward Caldwell Co., 386 Main St., Woburn; Willard Radio Co., Natick; Henry Poirier, Lowell; Varney's Garage, North Brookfield; A. F. Hegarty, 70 Newbury St., Chicopee; People's Supply Co.,

Hudson; Meyer Stores, Inc., Pittsfield; Brookline Music & Radio Co., Brookline; Katz Co., Athol; Uxbridge Hardware Co., Uxbridge; A. C. Simmons, Adams; M. Schmidt & Sons, North Adams; Washington Furniture Outlet, Brighton; and Ross Stores, Lexington.

Michigan—Nichols Bros., Adrian; H. Gross & Sons, Saline; A. B. Ball, Mason; D. M. Christian Co., Owosso; Lloyd's Department Store, Menominee; and in Detroit, Lind Mercantile Corp., 9221 Grand River, E. Kern Co., 1030 Woodward, and Gardner White Co., 6309 Mack Ave.

Minnesota—Morris Furniture Co., Paynesville; St. Paul Housefurnishing Co., St. Paul; Bolmgren Bros. and Davis & Ruben Co., Minneapolis; and Weber Jewelry & Music Co., Inc., St. Cloud.

Missouri—Igou Housefurnishing Co., 2741 North Grand St., St. Louis; Jack Funk, Sedalia; Nevada Radio Co., Nevada; Swartz Service Store, Madison; Rumble Hardware, Implement & Furniture Co.,

Weston; Aug Schwien Stove Co., St. Joseph; Sam Koslow, Hannibal; and Electric Supply Co., Springfield.

Nebraska—C. Land, Union; Loar Electric Co., McCook; Fitzsimmons Furniture Co., Oxford; L. I. Blessing, Curtis; C. R. Mahaffey, Hamlet; Reifert Furniture Co., Hartington; G. A. Granger Co., 1210 "O" St., Lincoln; E. D. Green, Mullen; Lundquist Radio Shop, Newman Grove; Dunlap Radio Shop, Ord; Al G. Lozier, 5301 Florence Blvd., Reliable Furniture Co., 4923 South 24th St., and State Furniture Co., 14th and Dodge St., all of Omaha; Midwest Trading Post, Valentine; Gaston Music Co., Hastings; Dan L. Harpster, Wymore; H. M. Dayton, Alma; and Johnson Mattress Works, Hastings.

New Hampshire—Lothrop Piano Co., Dover; Depot Square Auto Supply Co., Laconia; and W. D. Knowlton, Walpole.

New Jersey—Revere Radio, 266 Bloomfield Ave., Caldwell; L. & L. Motors, 136 Rutherford Ave., Franklin; and Edward

J. Perry, 37 River Rd., Fairlawn.

New Mexico—Dunn Plumbing & Heating Co., Roswell; and Henry F. Bock, Carlsbad.

New York—Delaney Electric Co., 138 Liberty St., Delaney Electric Co., 30 Church St., and T. S. Alling, 25 Day St., all of New York City; DeBoll Piano Co., Lewis Music Store, and North Side Furniture House, all of Rochester; Chester A. Schintzius, 859 Genesee St., Gemco Stores, Inc., 499 Elmwood Ave., Lino Furniture Co., 469 Niagara St., and Modern Electric Equipment Co., 659 Main St., all of Buffalo; Marvel Appliance Co., Inc., 165-26 Jamaica Ave., Jamaica, L. I.; Mendillo Plumbing & Heating Co., Scarsdale; Mitchell Electric Co., Suffern; Herman Katz, Troy; H. J. Samuels, Waterford; John D. Ryan, Greenwich; National Radio Service, 46 N. Portage St., Westfield; East Aurora Furniture Co., East Aurora; Riverside Furniture Co., Inc., 2640 Whirlpool St., Niagara Falls; O. G. Maul, Warsaw; C. C. Lull, St. Johnsville; and Marsh & Bachman Co., Hudson.

North Carolina—Free Furniture Co., Canton; Winget Rawlings Co., Gastonia; M. B. Smith, Burlington; and the O. P. Lutz Furniture Co., Lenoir.

Ohio—Virgel W. Fordyce, Cambridge; Huntington-Cincinnati Truck Co., Portsmouth; Groll Furniture Co., Waldo; Charles J. Barron Furniture Co., Zanesville; Monarch Printing & Supply Co., Marion; C. B. Ayres Refrigeration Co., Forestville; Miller Range Co., Cincinnati; L. E. Coen Furniture Store, Bowling Green; J. W. Holman, 1617 Central Ave., Middletown; Bolivar Central Garage, Bolivar; Hardware Supply & Coal Co., Chagrin Falls; Topping Electric Co., 10323 St. Clair Ave., Cleveland; Jurows Furniture Store, Warren; Kunkel Bros., Gallion; A. J. Shireliffe Furniture Co., Marietta; Harry A. Blue, Mt. Vernon; Community Furniture Stores, Inc., Bellefontaine; W. D. Braddock, Logan; Scott Furniture Co., Newark; and M. V. Maugher & Son, Basil.

Oklahoma—Sandusky & Anderson Motor Co., Kingfisher; Fred M. Wright, Pawhuska; C. H. Ward, Alva; Newman Mercantile Co., Enid; Palace Furniture Co., Deer Creek; and Modern Electric Shop, Oklahoma City.

Oregon—Newberg Radio Service, Newberg; H. L. Stiff Furniture Co., Salem, Silverton, and Albany.

Pennsylvania—In Philadelphia, L. Dubrow & Son, 420 South St., Deft Dubrow Co., Inc., 21st and Arch Sts., Louis Harold Furniture Co., 2440 Ridge Ave., and Globe Furniture Co., 6018 Market St.; W. L. Wilson and N. R. Broward, Huntington; Wolf Furniture Co., Altoona; J. P. Finn, Hollidaysburg; H. E. Alexander, New Castle; Faller Bros. Co., 707 Penn Ave., Wilkinsburg; the Electric Shop, York; W. J. Mulvan Co., Sewickley; Monessen Plumbing & Electric Co., Monessen; and Keystone Electric Co., Tamaqua.

South Dakota—G. Meisenholder Co., Vermillion.

Tennessee—Williams-Allen Hardware Co., White Pine and McEwen; Smythe Electric Co., Johnson City; J. F. Walker & Co., Knoxville; Wakefield & Butler, Lewisburg; Eveready Motor Co., Waverly; Ball Bros., Inc., Bristol, Tenn.-Va.; Auto Electric Co., Kingsport; Brenner Furniture Co., Clarksville.

Texas—Judson Bagwell Co., Longview; Gary Reed Pharmacy, Gilmer; Brannon Jewelry Co., Bonham; and H. W. Battis, Hillsboro.

West Virginia—Reichert Furniture Co., Wheeling; McHenry Electric Co., Parkersburg; Sweeney & Toothman, Weston; McMechen Electric Co., McMechen; Harper Furniture Co., Point Pleasant; and Brozka & Wells, Wellsburg.

Wisconsin—H. C. Frange Co., Green Bay; and Scheff's, Inc., Real Radio Service, and J. Kornely Hardware Co., Milwaukee.

INSTALLED PRICES OF 13 REFRIGERATOR LINES IN DETROIT AREA

General Electric						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
S-44	\$149.00	4.4	8.0	32	3.5	Sanak
S-67	199.00	6.7	11.6	84	9.0	Sanak
S-85	298.00	8.5	16.0	104	12.0	Sanak
S-107	385.00	10.7	20.0	104	12.0	Sanak
S-146	448.00	14.6	25.2	104	12.0	Sanak
S-182A	598.00	18.2	30.4	104	12.0	Sanak
HE-7	190.00	7.0	12.0	60	7.5	Glyptol
HE-5	145.00	5.0	9.4	60	6.75	Glyptol
HE-4	115.50	4.0	7.8	40	4.5	Glyptol
HX-47	165.00	4.7	8.3	40	4.5	Glyptol
HX-70	245.00	7.0	12.3	84	9.0	Glyptol
HT-47	180.00	4.7	8.3	40	4.5	Glyptol
HT-70	255.00	7.0	12.3	84	9.0	Glyptol
P-44	169.00	4.4	8.0	32	3.5	Porc.
P-67	219.00	6.7	11.6	84	9.0	Porc.
P-83	313.00	8.3	15.4	104	12.0	Porc.
P-110	380.00	11.0	20.4	104	12.0	Porc.
P-134	398.00	13.4	22.1	104	12.0	Porc.
P-170A	553.00	17.0	26.7	104	12.0	Porc.
P-180A	630.00	18.0	26.6	104	12.0	Porc.

Majestic						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
400	\$ 89.50	3.5	8.5	42	3.75	Elasto
450	99.50	4.8	10.7	42	4.0	Elasto
500	138.00	4.46	9.68	42	4.0	Elasto
700	177.00	6.1	13.05	84	8.0	Elasto
900	222.00	8.2	16.4	105	10.0	Elasto
950	249.50	8.2	16.4	105	10.0	Porc.

Westinghouse						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
AL-30	\$121.00	2.6	5.3	36	3.5	Lac.
AL-45	129.00	4.2	8.4	54	5.25	Lac.
AP-45	149.00	4.2	8.4	54	5.25	Porc.
AL-60	184.00	6.1	11.4	96	11.0	Lac.
AP-60	219.00	6.1	11.4	96	11.0	Porc.
AL-73	194.00	7.2	12.8	96	11.0	Lac.
AP-73	234.00	7.2	12.8	96	11.0	Porc.
AP-90	369.00	9.0	15.7	96	11.0	Porc.
AP-130	449.00	13.5	24.8	192	21.0	Porc.
AP-200	589.00	20.1	37.7	192	21.0	Porc.

Universal Cooler						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
LP-3.5	\$ 95.00	3.75	6.7	36	3.0	Sanak
LP-4.5	125.00	4.75	8.5	84	6.0	Sanak
LP-5.5	140.00	5.5	10.2	112	8.0	Sanak
LP-6.5	165.00	7.85	13.5	112	8.0	Sanak
P-5.5	150.00	5.5	10.2	112	8.0	Porc.
P-6.5	185.00	7.85	13.5	112	8.0	Porc.

Kelvinator						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
R-42	\$ 98.00	4.18	8.38	42	4.5	Lac.
R-53	126.50	5.3	10.41	63	5.1	Lac.
R-64	149.00	6.37	13.25	63	5.1	Lac.
R-75	189.00	7.5	14.77	84	6.8	Lac.
K-80	249.00	8.2	16.1	108	11.0	Lac.
PK-40	159.00	4.1	8.6	63	5.1	Porc.
PK-50	179.00	5.1	10.8	81	8.25	Porc.
PK-60	208.00	6.1	12.9	108	11.0	Porc.
PK-70	239.00	7.3	14.9	108	11.0	Porc.
PK-80	275.00	8.2	16.1	108	11.0	Porc.
D-55	224.00	5.6	12.2	54	11.0	Porc.
D-65	254.00	6.6	13.3	81	13.75	Porc.
D-75	284.00	7.8	16.5	108	16.5	Porc.
D-90	339.00	9.2	18.2	108	16.5	Porc.
D-120	399.00	12.5	25.5	162	25.75	Porc.
Guarantee on cabinet—one year. Guarantee on system—one year.						

Norge						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
A-44	\$ 99.50	4.40	8.88	42	4.5	Lac.
D-66	149.50	6.62	14.32	63	6.75	Lac.
J	165.00	5.17	10.23	42	4.5	Lac.
JP	175.00	5.17	10.23	42	4.5	Porc.
K	179.50	6.06	12.90	84	9	Lac.
KP	199.50	6.06	12.90	84	9	Porc.
M	239.50	7.14	14.19	84	9	Porc.
R	299.50	9.08	19.27	94	9	Porc.
W	399.50	11.05	22.42	72	14.5	Porc.
Guarantee on cabinet—one year. Guarantee on system—one year.						

Crosley						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
D-35	\$ 89.50	3.5	8.0	42	2.6	Lac.
D-45	99.50	4.5	10.6	63	3.9	Lac.
D-60	130.00	6.0	11.5	63	3.9	Lac.

Copeland						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
L-4	\$ 99.50	4.0	9.08	63	4.0	Lac.
L-5	119.50	5.3	12.23	84	5.0	Lac.
L-6	145.00	6.3	14.66	112	6.5	Lac.
W-7	225.00	7.3	15.26	105	6.5	Lac.

Frigidaire						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
Standard Series						
43	\$ 97.50	4.1	8.4	42	4.0	Dulux
63	140.00	6.1	13.4	63	6.0	Dulux
Super Series						
43	153.50	4.2	8.4	60	7.50	Porc.
63	194.00	5.7	10.9	78	9.75	Porc.
73	234.00	7.1	15.6	120	15.0	Porc.
93	277.50	9.1	17.9	120	15.0	Porc.
123	320.50	12.1	24.6	156	19.50	Porc.
153	401.00	15.1	29.4	208	26.0	Porc.
Guarantee on cabinet—one year. Guarantee on system—one year.						

Leonard						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
L-425	\$ 98.00	4.18	8.37	42	3.4	Lac.
L-531	122.50					Lac.
L-641	147.50	6.37	13.25	63	5.1	Lac.
L-451	148.00	4.68	10.14	63	5.1	Lac.
L-551	177.00	5.65	12.6	81	8.25	Lac.
L-651	199.75	6.77	12.02	108	11.0	Lac.
L-752	260.00	7.69	17.57	108	11.0	Lac.
PL-451	169.00	4.68	10.14	63	5.1	Porc.
PL-551	199.75	5.65	12.6	81	8.25	Porc.
PL-751	266.00	7.85	18.23	108	11.0	Porc.
PL-952	342.50	9.61	19.07	108	16.5	Porc.

Gibson						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
LH-49	\$ 99.50	4.5	7.41	63	3.75	Lac.
L-535	112.50	4.94	8.69	63	3.75	Lac.
L-710	139.50	6.56	11.77	84	5.0	Lac.
LH-54	164.50	5.51	9.33	63	3.75	Lac.
PH-54	179.50	5.51	9.33	63	3.75	Porc.
LH-63	179.50	6.05	11.62	84	5.0	Lac.
PH-63	199.50	6.05	11.62	84	5.0	Porc.
LH-77	199.50	7.36	13.10	105	6.25	Lac.
PH-77	229.50	7.36	13.10	105	6.25	Porc.
LH-82	249.50	7.58	14.1	105	6.25	Lac.
PH-82	279.50	7.58	14.1	105	6.25	Porc.
LH-98	289.50	9.10	15.2	126	7.5	Lac.
PH-98	324.50	9.10	15.2	126	7.5	Porc.
LH-148	505.00	12.5	19.7	210	12.5	Lac.

Sparton						
Model	PRICE Installed	SIZE Net cu. ft.	SHELVES Sq. ft.	ICE Cubes	Weight	FINISH
L-46	\$ 98.50	4.6	8.61	42	4.1	Lac.
L-57	156.50	5.7	11.73	70	6.7	Lac.
L-72	183.50	7.2	14.9	70	6.7	Lac.
L-75	241.50	7.5	13.97	84	9.3	Lac.
L-88	259.50	8.78	16.72	84	9.3	Lac.
L-106	364.50	10.5	16.53	126	11.5	Lac.
L-127	410.00	12.6	20.86	140	13.4	Lac.

ENGINEERING

PORTABLE FOUNTAIN BUILT BY LIBERTY

BOSTON—The new Liberty Fountainette, a portable, self-contained soda fountain, distributed by the Liberty Sales Corp. of this city, is now being shipped to dealers, according to Hal R. Meeks, president of the company.

The Fountainette is no larger than a medium-sized household refrigerator, and stands counter high. It is equipped with eight lever-type syrup faucets, operating from syrup containers which hold 1½ qts. each. All syrup dispensing mechanism can be demounted for cleaning.

Below the soda dispensing mechanism is a storage space of approximately 4 cu. ft. capacity.

A Liberty refrigeration system maintains both syrups and soda at serving temperatures, and cools the storage space. Block tin coils are used for both the soda water and drinking water.

Ross Heater Acquired By American Radiator

NEW YORK CITY—Ross Heater & Mfg. Co., Inc., has been acquired by American Radiator Co., according to A. R. Herske, sales promotion manager of the latter concern.

The Ross company will continue to manufacture heat exchangers, condensers, coolers, sterling sections, Arco metal pipe, sterling bubble caps, steam jet vacuum pumps, expansion joints, and Ross vacuum refrigerating units, as a division of American Radiator Co.

Norge Works Out Eight Hour Schedule

MUSKEGON, Mich.—A new eight-hour day schedule which is expected to further increase employment is being worked out for the Norge Corp. factory by H. Morley, plant manager.

More than 200 employees have been added to the company payroll since May 5, bringing the total now employed above 1,350.

Workers at the plant are reported to be earning from 20 to 50 per cent more than their minimum hourly rates of 18 cents for women and 35 to 60 cents for men.

METAL TRADES GROUP TO CONSIDER CURRENT TOPICS

CHICAGO—Dealing with current economic topics of interest to manufacturers, the National Metal Trades Association will hold its thirty-fifth annual convention at the Congress hotel here June 8, preceded June 7 by the annual meeting of the administrative council.

Tentative program includes the following subjects of discussion: "The Forces Behind Social Legislation," "The Farm Problem—What the Farmer Needs," "The Transportation Dilemma," "Unemployment Insurance," "Old Age Pensions," "Our Economic Outlook," "Our Financial Structure," and "Progress and Prosperity."

SCHMIDT INTRODUCES BEER-COOLING BOXES

CINCINNATI—Two vertical type Thesco coil boxes for cooling beer, a barrel storage refrigerator, and several fixtures and beer cooler enclosures have been introduced by C. Schmidt Co. of this city.

First coil box is finished outside in Monel metal, and stands 41½ in. high, 24 in. wide, and 24 in. deep. Two draft arms serve from a copper-lined tank which may be refrigerated by ice or mechanically refrigerated blocked-tin coils, or by Zahm counter pressure beer-cooling apparatus.

Second of the coil boxes is finished outside in golden oak, has a Monel drip pan, drainer plate, and drain, and is suited to the same refrigeration systems as the first model. Its two faucets, like the first model, are of the ball shut-off type.

Schmidt engineers have also designed two walk-in coolers for beer barrels. Smaller of the two holds from five to seven half barrels, and the larger holds from nine to eleven, the greater capacity being secured when the half barrels are placed on top of each other.

These refrigerators are shipped knocked-down. Exterior is plain flooring, painted gray. Interior is galvanized iron with a water-tight floor—protected by a hardwood floor rack. Insulation is 3½ in. of rock wool, with insulating paper, and ¾-in. lumber on each side, making a 4-in. wall.

For cooling single half barrels in storage, the company offers a 25x24½ x41-in. cabinet finished in golden oak. Interior is lined with galvanized iron, the floor is water-tight, has a drain, and is protected by a floor rack.

Other beer-dispensing equipment supplied by the Schmidt company includes a sink-and-drainboard, a keg rack, a service counter enclosure, an enclosure for electrically refrigerated draft-beer coolers, and slide- and lift-top refrigerators.

Power Show to Be Held at Stevens Hotel, Chicago

CHICAGO—Sixth Power Show, originally scheduled to be held at the Coliseum during Engineering Week which opens June 26, will be held in the exhibition hall of the Stevens hotel instead, officials of the show have announced.

The change was made to bring together the engineers banquet and the exhibit in the same building. Nineteen engineering societies, including the American Society of Refrigerating Engineers, will participate in Engineering Week.

15 DISTRIBUTORS NAMED FOR STRANG CONDITIONER

KANSAS CITY, Mo.—Fifteen distributors have been appointed by the Strang Air Conditioning Corp. of this city to handle the line of electrically refrigerated air-conditioning equipment being manufactured by the Strang company.

The new distributors are: Ludwig Hommel & Co., Pittsburgh; Wagner Radio Co., Indianapolis; Stratton & Terstegge Co., Inc., Louisville; Phillips & Buttorff Mfg. Co., Nashville; Birmingham Electric Battery Co., Birmingham; Shuler Supply Co., New Orleans; Texas Radio Sales Co., Dallas; Motor Equipment Co., Wichita, Kan.; Sampson Electric Co., Chicago; A. L. Fink Electric Co., Cincinnati; Shadbolt & Boyd Co., Milwaukee; Ozburn & Abston Co., Memphis, Tenn.; Hopkins Equipment Co., Atlanta; Southern Equipment Co., San Antonio; and Sanitary Distributing Co., St. Louis.

Name given the new air conditioner is the "Strang Room Cooler and Air Conditioner," according to John J. Strang, president of the manufacturing organization.

DEVILBISS PUTS NEW AIR TRIGGER ON GUN

TOLEDO—A new air trigger with a shorter trigger movement and requiring less pressure than previous designs has been incorporated in the new type MB spray gun of Devilbiss Co. of this city. The new gun employs an air piston to relieve the spring tension on the fluid needle when the valve is open, permitting the use of a strong spring pressure to close the needle, while the trigger pull need only be strong enough to open the air valve.

Another feature of the new gun is its "unrestricted" air passage which passes an increased volume of air in the head, and atomizes at a lower air pressure, reducing fumes and resultant paint waste of high velocities through small orifices, the designers claim.

The gun has the ball-and-cone feed, and a graduated spray width adjustment to permit the operator the control of the width and character of the spray. It has a removable spray head to facilitate cleaning.

Body of the gun is a heat treated aluminum alloy forging.

G. E. HEATING UNITS DRY GLUE ON ICE-PACKAGERS

SCHENECTADY—Packaged Ice Corp., which operates ice-vending machines in a number of western cities, has adopted General Electric cartridge type heating units for drying the glue used in sealing the ice wrappings, according to G. E. officials here.

Because the ice-wrapping apparatus is operated in rooms where the temperature is extremely low, it is essential that oil used in the machines be kept at the proper viscosity. Two General Electric sheath-wire heating elements, controlled by a G. E. thermostat, provide for maintenance of the oil at the correct temperature.

SEALED LUBRICATION

an exclusive feature on

DELCO MOTORS



To be entirely dependable, a refrigerator motor must be designed expressly for the unit it is to serve. It must be quiet. It must have sufficient oil capacity to function with little or no attention. The Delco motor with oil reservoir and non-spillable end-head (a patented, exclusive Delco feature) answers these requirements in a way that entirely satisfies those refrigerator manufacturers who are interested in the performance of their product long after the warranty has expired. You can depend on Delco quality construction . . . and you can forget all lubrication problems when you use Delco motors with *Sealed Lubrication*.

DELCO PRODUCTS CORPORATION
DAYTON, OHIO

ENGINEERING

New Cutler-Hammer Control Defrosts By Raising the Cut-in Point

By John T. Schaefer

DETROIT—Engineers of Cutler-Hammer, Inc., main offices in Milwaukee, have designed a new refrigerator control which incorporates a wide cycle defrost mechanism to permit defrosting of an evaporator without losing food-preserving temperatures or melting ice cubes, according to A. R. Johnson, manager of the Detroit office, and E. F. Weiss, sales engineer, who are introducing the new cold control to refrigerator manufacturers.

The new control is similar in design to that produced last year for several refrigerator manufacturers, with the addition of the wide cycle defrost mechanism.

Wide cycle defrosting is an arrangement which increases the cut-in temperature point to permit melting of frost and ice accumulations on the evaporator, according to Mr. Stark. The cut-out temperature is maintained at the normal value which was fixed by the factory setting of the control. This operating cycle maintains safe cabinet temperatures, keeps ice cubes hard, yet permits the evaporator to defrost before each cut-in.

This is done in the Cutler-Hammer control with a spring and cam arrangement which is associated with the cold control knob. When the pointer is turned to the "defrost" position

of this type has inscriptions reading "colder," "warmer," and "defrost," the section covering the defrost movement being offered in color.

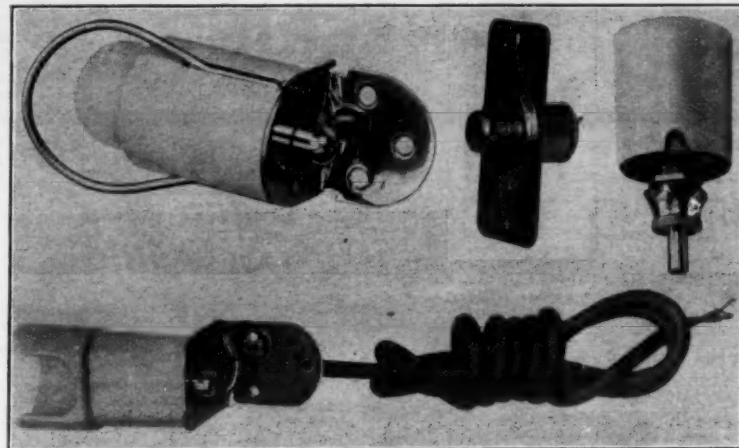
Defrosting of the evaporator can also be accomplished by simply pulling out the overload relay button to the "off" position as was done with last year's control, Mr. Stark points out, so that the circuit is entirely disconnected until the frost is all melted off, and the housewife pushes the button back into the "on" position.

Another feature of the new control is its altitude indicator or range adjustment, a special arrangement which indicates any change which has been made in the temperature adjustment since it left the factory.

By loosening the screw which holds the control knob, the temperature range can be changed by turning the knob with relation to the shaft. This adjustment can be made to 180° in either direction, but no more, so that the control setting cannot be changed so much as to become inoperative. The indicator shows just how much a setting has been changed in the field from its factory setting.

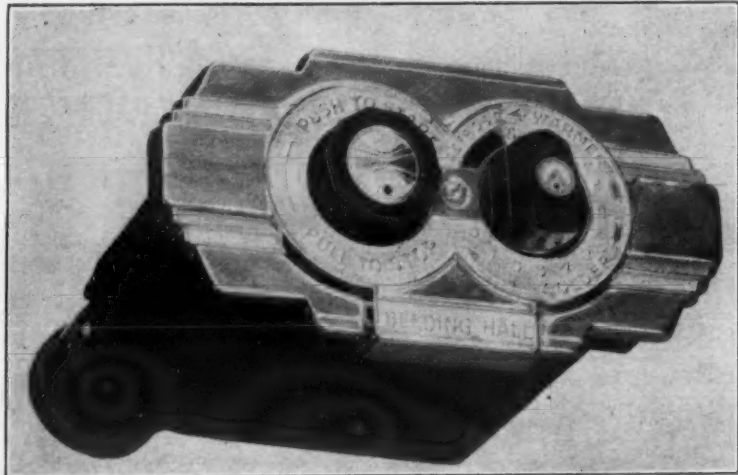
Controls can be furnished for operation entirely on a vacuum, on vacuum and pressure, or entirely above atmospheric pressure, depending on characteristics of the refrigerant used, its designers point out, with almost any range or differential adjustment.

For Interior Lighting



Top left: combination light and switch unit with standard Edison lamp socket and wire lamp guard, for mounting on breaker strip. Top center: door switch for use with separate dome lights. Top right: one-hole mounting combination light and switch for installation on evaporator shield. Below: combination light and switch with intermediate base.

Semi-Automatic Defrosting Control



Exterior view of Cutler-Hammer's new control, this particular model being furnished to Gibson. The dark section of the right-hand dial is the defrosting position.

Under ordinary conditions, where the control is mounted either horizontally or vertically, the temperature adjusting knob points upward at the normal setting of the dial. By turning the knob clockwise, the temperature setting is lowered with correspondingly reduced evaporator and cabinet temperatures.

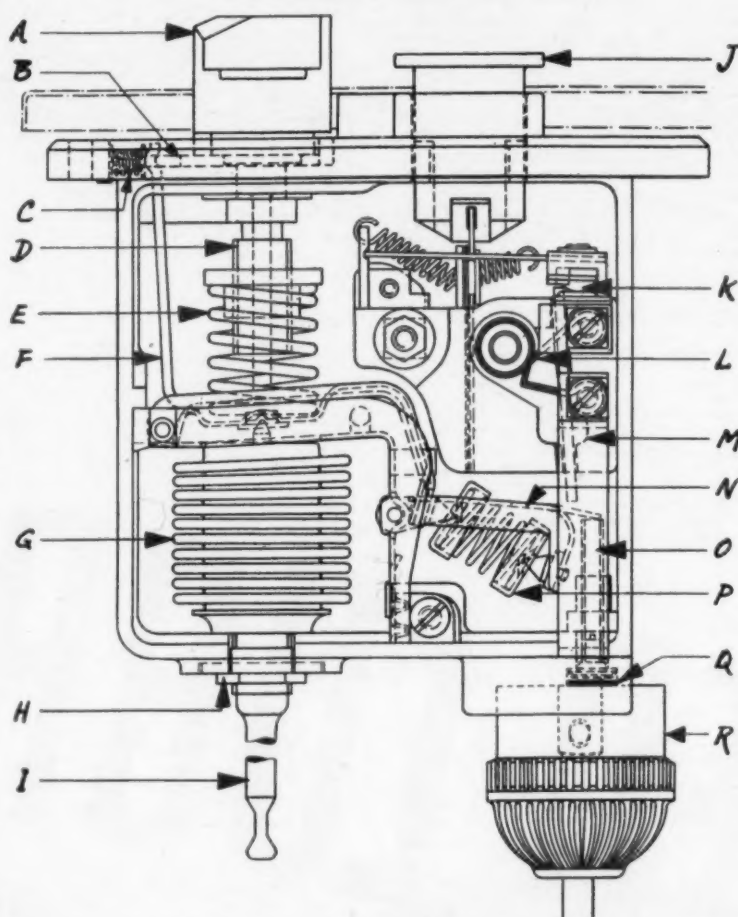
Conversely, by turning the knob counter-clockwise, the temperature setting is raised. If this temperature setting is raised sufficiently high so that the cut-in point of the control is approximately 38° F., the evaporator will defrost, Wilkinson Stark, refrigerating engineer, explains.

(at the left of the warmer points), the cam holds the defrost spring out of operation. In this position, a bracket, permanently attached to the main thermostat lever, engages the defrost spring just prior to reaching the cut-in point of its travel, and requiring a greater pressure in the bellows element before cutting in the machine (see diagram at right).

When the bracket moves toward the cut-out position, the spring again engages its sliding key just before reaching the cut-out position, so that the defrost spring has no effect upon the cut-out temperature.

The nameplate furnished with a con-

Schematic Diagram



Lettered parts of Cutler-Hammer's defrosting type of temperature control are: A—Knob; B—Wide cycle defrost mechanism; C—Wide cycle defrost spring; D—Temperature control screw; E—Loading spring; F—Defrost lever; G—Bellows; H—Tube lock nut; I—Bellows tube; J—Start, stop, or overload relay button; K—Silver contacts; L—Overload heater coil; M—Push bar; N—Toggle lever; O—Differential adjusting screw; P—Transfer spring; Q—Seal for differential screw; R—Attachment plug.

Power elements for either pressure or temperature types of control are available, although the most common practice in household refrigeration is use of the temperature control.

Bellows are solder-joint recessed to obtain a solder film between the tube and the head, and between the tube and the bulb. The charge of volatile liquid in the power element is checked at the factory for conformance to the pressure-temperature curve, and cycling of the control adjusted in low-temperature brine tanks. Before shipment, the controls are aged for six days at 150° F. to attain permanence of the temperature settings.

The bearing point on the end of the bellows is of stainless steel, and works against the loading spring in a chrome-plated hardened steel cup. Stainless steel is used for all small springs, designers of the control state, while hardened steel parts are chromium plated and other steel parts are nickel plated. Brass parts are cadmium plated. Electrical connection is made with a standard attachment plug.

The thermal overload relay functions at excessive currents to open the motor circuit, at the same time releasing the start and stop button to the "off" position (out). This action exposes a red portion of the button to show the refrigerator owner that the control is off.

To reset the relay, the button must be depressed again to the "on" position. Frequent tripping of the overload relay would indicate that trouble has developed and that the motor current should be determined.

The overload relay employs a small

box warm enough to prevent condensation, its designers claim, because a certain amount of current passes through it continually during the operating cycle.

For installation on water coolers and small, low-priced refrigerators, the temperature selecting feature of a control is not always required, in which case the temperature adjusting screw is sealed and the control furnished without the control knob.

Another product which the company furnishes the refrigeration industry is a starting relay for hermetic refrigerators to transfer motor connections from starting to running. These are built for both split-phase and capacitor motors. The only difference between the condenser type relay and the split-phase type is the addition of a down contact for condenser motors, and a resistance coil for split-phase motors.

Still other refrigeration products are interior electric lights and door switches for operating them. These are made in a number of styles, and in the latest designs accommodate a standard 7½, 10, or 15-watt Edison lamp which can be purchased in nearly any electric store.

Thus there is a combination light and switch assembly with a receptacle for an intermediate size lamp. This is for mounting on the breaker strip of a cabinet, the opening and closing of the door furnishing the movement to close and open the light circuit.

Another style is a combination light and switch for mounting on the breaker strip, with a standard Edison base and a wire loop guard to protect the lamp. Various bracket designs and different angularities of the bracket are furnished in this model.

For installation on an evaporator shield, the company has designed a one-hole mounting combination light and switch with a standard Edison base, and for use with separate dome-lights the company has designed a small door switch for installation alone on the breaker strip.

Travel of a standard switch button is ⅜ in., but the switch opens when the button has moved just 1/16 in. giving 5/16 in. overtravel, Cutler-Hammer engineers point out. Buttons are chromium plated, or furnished with a Bakelite tip, while brackets are tin dipped, nickel plated, chromium plated, or cadmium plated.



The LIBERTY
FOUNTAINETTE

... THE ONLY PORTABLE
ELECTRICALLY REFRIGERATED
SODA FOUNTAIN ...

A REAL SALES OPPORTUNITY IN A BRAND NEW MARKET

A complete portable soda department in itself—8 flavors—coarse soda, fine soda and ice water—and an electric ice box of approximately four cubic feet capacity. Its modern beauty attracts trade—its simplicity permits any clerk to make dozens of delicious fountain drinks.

Here's a chance to make real money in the electric refrigeration field—there's nothing else like it on the market—thousands of stores will want the Fountainette.

Write or wire NOW for the LIBERTY SALES PLAN

LIBERTY SALES CORPORATION

Also Liberty Electrically Refrigerated BEER Dispensing Units—for immediate delivery.

10 HIGH STREET • BOSTON • MASS.

"DRY-KOLD" SERVICE BARS



THE HIGH STANDARD OF "DRY-KOLD" REFRIGERATORS IS MAINTAINED IN "DRY-KOLD" BEER DISPENSING EQUIPMENT

The "Dry-Kold" manufacturing and engineering experience dates back to the pre-Volstead days of course and you may know "Dry-Kold" bars are designed and built as they should be for correct cooling and serving of beer.

You have the same certainty of results that has for years characterized "Dry-Kold" refrigerators, cooling rooms and display cases for ice or mechanical refrigeration.

WRITE FOR BULLETIN D

THE "DRY-KOLD" REFRIGERATOR CO., NILES, MICH.

AIR CONDITIONING

DE LA VERGNE'S UNIT REVERSES CYCLE AS WINTER HEAT PUMP

(Concluded from Page 1, Column 1) chine pumps heat into the room in the winter.

Editor's note: For detailed descriptions of the reversed refrigeration principle, see articles on the subject in any one of the following past issues of *ELECTRIC REFRIGERATION NEWS*: Feb. 10, 1932, (A. R. Stevenson); March 9, 1932, (H. L. Doolittle); or March 23, 1932, (R. E. Keyes).

In the De La Vergne machine, when the operation is reversed from an air cooler to a heat pump, the function of the ducts is reversed to conduct warm moist air into the room and to blow refrigerated air outside. The evaporator becomes the condenser and the condenser becomes the evaporator. Mr. Grubbs explains, these two units being identical in construction. The change is made by simply turning a lever.

Designed Primarily to Cool

"While obviously the unit was designed primarily for summer use," Mr. Grubbs states, "its heating feature can be utilized on the frequent cool days during the in-between seasons of spring and fall when the regular heating system is not in use. The system is capable of serving as the main source of heat in warmer climates where the temperature seldom goes below freezing, and where heating for comfort is required at infrequent intervals."

"For winter use, provision can be made for installation of fin-type radiator coils in the same cabinet, and connection made to the regular heating system," he points out, "to operate as an adjunct to the existing heating equipment and provide a mixture of some outside fresh air, additional humidity, filtration, and circulation." Tests indicate that the ratio of heat units per kilowatt of energy input produced with the heat pump range from three to five times the amount which would be produced with an ordinary electrical resistance coil, depending upon the outside temperature, De La Vergne engineers claim.

Installation consists of making an electrical connection capable of handling 2 kw., and placing the ducts over the window-sill under the raised sash.

In a room of 5,000-cu. ft. capacity, the air conditioner will reduce the temperature from 10° to 15° F., with an equivalent reduction in the relative humidity, the designers state.

The compressor is a two-cylinder opposed vertical shaft unit, direct connected to a 2-hp. vertical motor sealed in the same welded steel case as the compressor. Bore of the compressor is 1½ in., stroke—1½ in. Refrigeration capacity of the system is 18,000 B.t.u. per hour, or 1½ tons of i.m.e. per day. The refrigerant charge is seven pounds of Freon.

Can Operate Fans Alone

Two centrifugal fans, direct connected to a ¼-hp. motor, bring in outside air and circulate the conditioned air. Under conditions when temperature and humidity need no correction, the fans can be operated alone to filter and ventilate.

In cooling, the air conditioner recirculates the room air with a controllable proportion of outside air—which is introduced under pressure from the discharge duct of the outside air circulating fan.

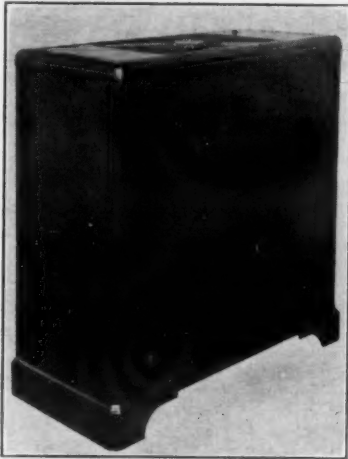
Moisture condensed from the air is collected in a deep pan and drained to a similar pan under the condenser where it is evaporated by heat of the condenser, and carried out in the form of vapor in the discharged air. Filtration accompanies both cooling and heating.

Using the same arrangement in heating, heat and moisture are extracted from the outside air and added to the room air to raise its moisture and humidity, De La Vergne engineers declare.

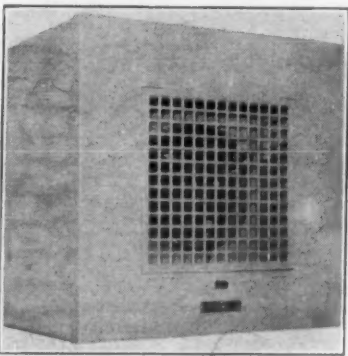
Although the company plans a national distribution set-up next year, distribution this season will be confined to direct sales through the De La Vergne sales organization. Sale of air-conditioning equipment is under the direction of Mr. Grubbs in Eddystone, Pa. Mr. Grubbs was formerly commercial vice president of the Victor Talking Machine Co., and later vice president in charge of sales for the R.C.A. Victor Corp.

Two years ago the De La Vergne Engine Co. was acquired by the Baldwin Locomotive Works through its subsidiary, Baldwin-Southwark Corp., and manufacturing operations of all three companies concentrated at the parent company's main plant in Eddystone, Pa.

G. E. Room Coolers



New floor-mounted type.



Wall-mounted room cooler.

G. E. AIR CONDITIONER TO COOL, DEHUMIDIFY ROOM

(Concluded from Page 1, Column 5) separate connections will be required both for the cabinet and the compressor.

The cabinet connections will consist of two small refrigerant lines, a drain, and an electric power line. The connections for the compressor will comprise electric power and two pipe lines for the water-cooling system.

The refrigeration compressor will have a capacity of 1 ton of refrigeration and will be driven by a 2-hp. motor. The room cabinet can be either wall-mounted, for delivering the cooled air horizontally, or floor-mounted, in which case the air current will be vertical.

A 2-ton compressor is also available, which will supply two room cabinets, so that it will be possible to provide summer air conditioning for two rooms at once.

The all-year-round General Electric air conditioner will not only replace the radiator or register of the heating system for heating the room in winter, but will function as a room cooler in the summer. In effect, the room will be heated and humidified in the winter and cooled and dehumidified in the summer, by the same apparatus.

In addition, throughout the entire year, this year-round air conditioner will ventilate the room, purify and circulate the air, and silence noises which would ordinarily enter from the outside.

The equipment which the unit contains will consist of heating and cooling surfaces, humidifier, filter for filtering the outside air, and the noise silencer. The outside air admitted through the unit can be controlled from zero up to 50 per cent of the total air handled.

The connections necessary for this equipment will be water supply, drainage, electricity, steam supply, steam condensate drain, condensate drain from cooling coils, and ventilation air duct. The compressor will be included in the cabinet.

The unit's capacity will be two-thirds of a ton of refrigeration for cooling and 40 sq. ft. for heating. The change from winter service to summer service can be readily effected by throwing a switch and adjusting a water valve.

It is also announced by General Electric that its engineers will have ready for installation this year a central air-conditioning system, which will comprise a cooling and dehumidifying system to be combined with the present winter air-conditioning system of that company.

This will be built and installed according to the conditions of each building to be equipped, and will use the duct method of air conveyance. The system will operate from a central plant installed in the basement.

SHERIFF'S OFFICE COOLED BY LEWIS AND FRIGIDAIRE

MINNEAPOLIS—Earl Brown, former sheriff of Hennepin county, Minnesota, in which are the Twin Cities, has just completed an office building on his farm which is 100 per cent air conditioned with Frigidaire equipment.

The installation was made by Lewis Air Conditioning Co. with the assistance of R. E. Spear, Frigidaire Sales Corp., Twin Cities branch. Fans and duct work were used. Visible parts of the air-conditioning system match the decorations of this modern farm office structure.

In the basement, Mr. Brown installed a large commercial Frigidaire box for the storage of game, and in a small kitchen that is part of the building, is a household cabinet.

Copeland Used to Cool Pullman Lunch

NEW YORK CITY—Hot summer conditions in the Court Diner, Brooklyn dining car restaurant, are expected to be relieved next summer by Copeland air-conditioning equipment recently installed by Copeland Refrigeration Co. of New York, according to A. Rosmarin, manager of the commercial department.

A model T compressor and large Copeland blower coil combine with a rearranged exhaust system to condition the restaurant.

Another installation reported by Mr. Rosmarin was made in the Pepper Pot restaurant, located in Greenwich Village. Two dining rooms of the restaurant have been equipped with two model T compressors, operating an indirect cooling system using two 125-gal. Filtrine pressure tanks and in turn hooked up to Airtrol B-½ units.

To Meet Immediate Demands for BEER SERVICE

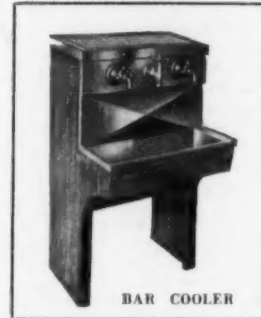
The return of Beer has resulted in a heavy demand for equipment for the dispensing of beer in bulk and bottles.

Every possible need you may have for this equipment can be met from the Leitner Line, a most complete line of Service Bars, Bar Coolers, Novelty Boxes, Portable Bars, etc.

All beer service equipment in the Leitner Line is of the newest type, with all of the latest mechanical improvements and designed to be in keeping with the present day modern motif.

We will gladly furnish you full information, whether for immediate shipment of your present needs or for future needs from our complete line.

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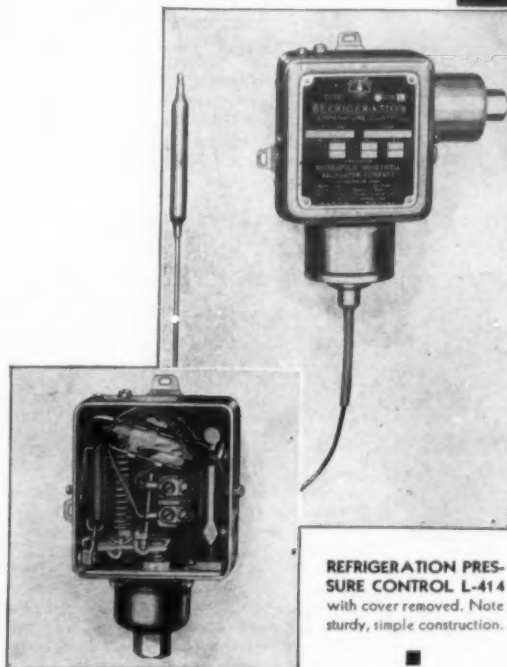
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New Data Prepared on Air Conditioning To Determine Operating Requirements

By D. W. McLenagan,* Air-Conditioning Department,
General Electric Co., Schenectady, N. Y.

THE growth of public interest in air conditioning of homes gives rise to questions which will affect the development of this new art. What size and type of equipment are needed to condition the air of an average home? How long are the operating seasons for this equipment? Must the electric utilities enlarge their service facilities to care for the added load? Does this load combine favorably with other domestic electrical loads? This paper presents data relating to these questions, based on climatic conditions in various parts of the country.

Functions of Air Conditioning

Air conditioning includes specifically:

1. Control of air temperature.
2. Control of relative humidity, or moisture content of the air.
3. Fresh air supply and cleaning, to remove odors and dust.
4. Circulation of the air.

Although air conditioning is commonly associated with the idea of cooling in summer, it includes also heating and humidification in winter, as well as circulation of air and ventilation during all seasons.

The development of automatically controlled heating plants has made possible more accurate control of the temperature in heated buildings, as well as more efficient use of fuel.

The regulation of humidity is very important in promoting human comfort. It is well-known that with low outdoor temperatures, the indoor air tends to become very dry unless water vapor is constantly added.

Although the relation between humidity and health has not been established beyond question, the evidence in many cases points to an improvement in health where proper equipment is installed to maintain a relative humidity of 40 to 50 per cent in winter.

On the other hand, the very humid conditions which frequently prevail in summer, even when the temperature is not extremely high, call for equipment to dehumidify the air.

Cooling equipment usually is used for this purpose in addition to its other function of reducing the temperature. The cold surfaces remove some of the moisture from the air, just as a pitcher of cold water in a warm room becomes covered with water condensed out of the surrounding air.

With properly directed air circulation, comfort may be improved by reducing the temperature difference between the breathing level and the floor level, particularly in cold weather, when this difference may be as much as 10° F. if the air is not kept in motion.

The advantages of clean air can hardly be questioned. A properly designed ventilating and cleaning system must not only have capacity adequate to handle several air changes

*Paper presented at meeting of north-eastern district of American Institute of Electrical Engineers, at Schenectady, N. Y., May 11, 1933.

per hour in the occupied room, but must also distribute this air without causing drafts.

By properly directing and controlling the circulation of air, we may remove the stale air and tobacco smoke. As a by-product, the ventilating equipment can eliminate much of the noise which we now tolerate in offices which are ventilated by opening the windows.

Determination of Operation Requirements

To determine the operating requirements for air-conditioning equipment, temperature charts (Figs. 1-4) have been prepared from the weather records of various cities. In all of these charts, curve AA shows the highest temperature obtained during any month over a period of several years.

The temperatures recorded during the summer months, therefore, indicate the maximum conditions at which a cooling equipment may be required to operate. Curve CC indicates the mean temperature for each month.

Curve EE indicates the lowest temperatures recorded during each month, and the readings for the winter months give an index of the maximum capacity for which heating equipment must be designed.

Curve BB represents the mean temperature plus one-half the daily variation, and curve DD represents the mean temperature minus one-half the daily variation. Since all of these curves are based on the combined records of several years, they may not accurately indicate the heating and cooling loads for any specific year.

Heat Needed Below 65°

The heating season is taken as the period during which the monthly mean temperature is below 65° F. For Chicago or Albany this period is approximately 9½ months, although actually about 95 per cent of the heating load normally occurs during a seven-month period.

The maximum required heating capacity is usually based on a temperature 15° F. above the lowest ever recorded, and the plant is specified to have at least 20 per cent excess capacity, to provide quick response.

The total heating effect for the season is the summation of the amounts by which the daily mean temperatures fall below 65° F., and is obtained from the degree-day handbook of the American Gas Association.

Since an automatic heating plant operating continuously at full capacity, would give a degree-day product equal

Temperatures in Four Cities

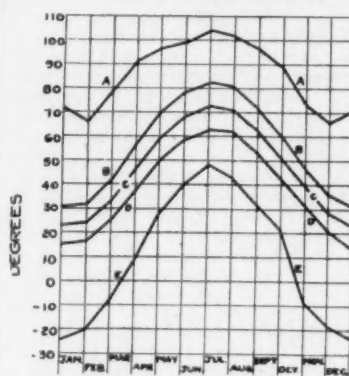


FIG. 1 CLIMATIC TEMPERATURES FOR ALBANY, N. Y.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

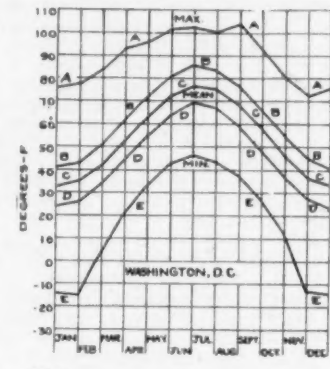


FIG. 2 CLIMATIC TEMPERATURES FOR CHICAGO, ILL.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

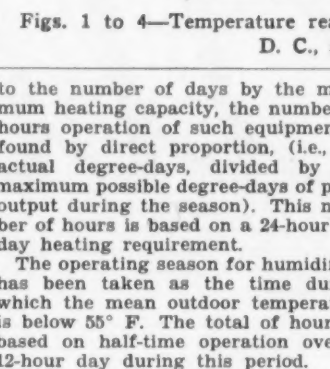


FIG. 3 CLIMATIC TEMPERATURES FOR WASHINGTON, D. C.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

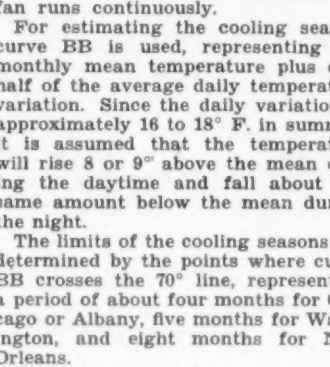


FIG. 4 CLIMATIC TEMPERATURES FOR NEW ORLEANS, LA.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

Figs. 1 to 4—Temperature readings for Albany, Chicago, Washington, D. C., and New Orleans.

to the number of days by the maximum heating capacity, the number of hours operation of such equipment is found by direct proportion, (i.e., the actual degree-days, divided by the maximum possible degree-days of plant output during the season). This number of hours is based on a 24-hour per day heating requirement.

The operating season for humidifiers has been taken as the time during which the mean outdoor temperature is below 55° F. The total of hours is based on half-time operation over a 12-hour day during this period.

Where forced-circulation duct systems of warm air heating are used, the operating period for the fan is assumed equal to that of the heating plant, although in some systems, the fan runs continuously.

For estimating the cooling season, curve BB is used, representing the monthly mean temperature plus one-half of the average daily temperature variation. Since the daily variation is approximately 16 to 18° F. in summer, it is assumed that the temperature will rise 8 or 9° above the mean during the daytime and fall about the same amount below the mean during the night.

The limits of the cooling seasons are determined by the points where curve BB crosses the 70° line, representing a period of about four months for Chicago or Albany, five months for Washington, and eight months for New Orleans.

This estimate of the cooling season for Chicago and Albany may be somewhat short of the actual season, since the spring and fall months often bring periods of extremely hot weather which are offset, in the records of monthly mean temperature, by periods cold enough to require house heating.

The maximum cooling effect which is considered desirable is shown in Table I.

TABLE I
CONDITIONS RECOMMENDED FOR HOUSE COOLING
Taken from Guide of American Society of Heating & Ventilating Engineers

Outside Temp. Deg. F.	Dry Bulb Deg. F.	Wet Bulb Deg. F.	Relative Humidity Per Cent	Grains of Moisture Per Lb. Dry Air
95	80.0	65.2	73.4	45.0
90	78.0	64.5	72.2	47.5
85	76.5	64.0	71.1	50.0
80	75.0	63.5	70.2	52.5
75	73.5	63.0	69.3	55.0
70	72.0	62.5	68.2	60.0

The recommendations of Table I may be approximated if the house is cooled by one-half the difference between outdoor temperature and 70° F. It is generally believed, however, that a temperature above 82° or 83° F. does not constitute a comfortable condition for continuous occupancy, even when the outdoor temperature is 105° F. or more.

For the northern cities, 15° of cooling (with suitable control of relative humidity) generally represents the maximum size of plant which is justified, even though this may not be adequate on the occasional 100° days. For the southern cities, in which this temperature is not uncommon, a cool-

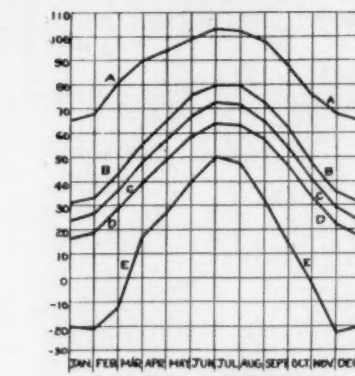


FIG. 5 CLIMATIC TEMPERATURES FOR CHICAGO, ILL.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

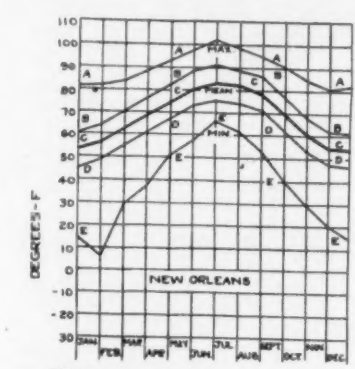


FIG. 6 CLIMATIC TEMPERATURES FOR WASHINGTON, D. C.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

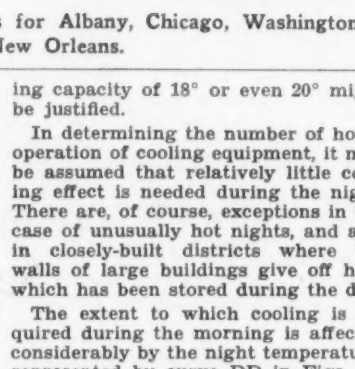


FIG. 7 CLIMATIC TEMPERATURES FOR NEW ORLEANS, LA.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

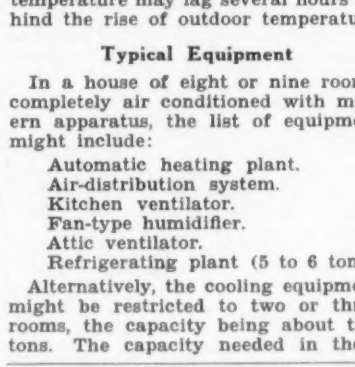


FIG. 8 CLIMATIC TEMPERATURES FOR NEW ORLEANS, LA.
AAA—MAXIMUM EVER RECORDED DURING MONTH
BBB—MEAN (CC) PLUS ONE-HALF AVERAGE DAILY VARIATION
CCC—MONTHLY MEAN TEMPERATURE
DDD—MEAN (CC) MINUS ONE-HALF AVERAGE DAILY VARIATION
EEE—MINIMUM EVER RECORDED DURING MONTH

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equipments is closely related to the type of building construction. For a well-insulated house with tight doors and windows, both the winter heating and the summer cooling loads will be considerably smaller than those of an uninsulated house of loose construction.

Similarly, in a loosely built house, the humidity which can be maintained may have to be held below the optimum value by the danger of condensation.

Of this equipment, the air-distribution system and the kitchen ventilator would be used throughout the year, and the other equipment for limited seasons which can be estimated from the climatic data.

Within reasonable limits, the size of the heating load does not greatly affect the electrical consumption of an automatic heating plant. The rate of fuel burning is usually adjusted to the maximum heating requirement of the building; and since the rating of the electrical equipment does not increase in direct proportion to the capacity of the heating plant, the energy consumption of the electrically driven mechanism is dependent principally on the severity of the weather.

Cooling with Compression System

On the other hand, cooling equipment of the conventional vapor compression type uses a motor-driven compressor as the means of pumping heat out of the house; hence the energy consumption is directly proportional to the total cooling load.

With electrical energy at 3 cents per kwh. a five- to 6-ton cooling plant, requiring about 10 hp. in the compressor and auxiliary drives, involves a rather high energy cost; but by considering the sources from which heat enters the house, we may suggest means of reducing this load, and thereby bringing the equipment within the reach of a greater number of users. In a nine-room house in Schenectady, the cooling load was calculated as follows:

	B.t.u. per hr.
Conduction through walls and windows	15,300
Five people (400 B.t.u./hr./person)	2,000
Cooking—disregarded since kitchen is ventilated but not cooled	
Lighting—negligible during the day	
Ventilation and dehumidification	12,600
Conduction from attic, where heat accumulates from solar radiation	10,200
Solar radiation on walls and through unshaded windows	26,100
Total B.t.u. per hr.	66,200

This load was based on outdoor conditions of 91° F. and 45 per cent relative humidity, and indoor conditions of 78° F. and 49 per cent, with slightly over one air change per hour.

The use of awnings over the windows exposed to the sun reduced the load by 11,000 B.t.u. per hour. Circulation of outdoor air through the attic, preventing the accumulation of heat due to solar radiation, further reduced the load by 10,200 B.t.u. per hour, with an expenditure of only 150 watts for the attic ventilating fan. The total cooling load was thus reduced to 45,000 B.t.u. per hour.

The use of an insulating layer in the walls would have reduced further the entrance of heat into the house, bringing the total cooling load down to about 36,000 B.t.u. per hour.

A plant of this capacity would require a 5-hp. compressor motor, and approximately ½ kw. of auxiliaries. Its first cost and operating cost (as well as those of the winter heating plant) would be correspondingly lower, and the market considerably increased.

The use of these shielding features secures another advantage in summer, in retarding the entrance of heat by radiation and conduction. In Albany.

(Concluded on Page 21, Column 1)

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NIGHT VENTILATION CUTS MORNING LOAD

(Concluded from Page 20, Column 5) bany, N. Y., for example, the mean daily temperature variation during July is about 18° F.

With adequate ventilation of the house during the night, the operating periods of the cooling plant during the morning are reduced by wall insulation and shielding, unless the night has been exceptionally hot. When the outdoor air cools again in the evening, the heat flow through the house walls is partly reversed, and a definite gain is realized from this time lag.

It is evident that the capacity and the cost of operating air-conditioning equipment are closely related to the type of house construction. When planning new buildings, much may be done to reduce the size of equipment required, its operating cost, and the cost of installation.

Power Requirements

Even among air-conditioning equipment of a single type, there is a considerable variation in power requirements. Nevertheless, an average figure may be established for each important class of equipment used, to serve as a basis for estimating the energy requirements of such apparatus for the operating season.

It is also possible to designate the general types of electric motors which constitute most of this load, and to show their approximate power factors. Summaries of this type have been prepared for Albany and Washington, D. C. (Fig. 5 and 6.) Of course, these data do not represent accurately the energy consumption for any specific make of equipment.

Referring to these tabulations, the figures representing hours of operation per season may be misleading unless properly interpreted. With the varying weather conditions usually encountered, much of the operation is intermittent or at reduced capacity, depending on the design.

These intermittent or reduced-capacity periods, distributed as needed over the operating season, produce comfortable conditions with only a relatively small number of equivalent hours of full-capacity operation.

From these same tabulations the load factor of the various devices may be estimated. As regards automatic heating equipment, in Albany the load factor is approximately 33 per cent based on eight months; in Washington, 26 per cent based on seven and one-half months. These values are comparable to the load factor of a domestic refrigerator, and the rate of energy use is also comparable.

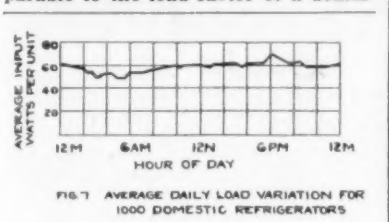


FIG. 7—AVERAGE DAILY LOAD VARIATION FOR 1000 DOMESTIC REFRIGERATORS

The load factor of cooling equipment is somewhat lower. In Washington, for example, the operation of cooling equipment for 335 hours represents a load factor of 9.2 per cent based on an operating season of five months, or 3.8 per cent based on the whole year; for New Orleans, 17 per cent based on an eight-month operating period, or 11.4 per cent based on the year.

Although no operating records are available for large numbers of house-cooling installations, an indication may be obtained from Fig. 7, which shows a daily load factor of 87 per cent for 1,000 domestic refrigerators, although the load factor of a single domestic refrigerator is of the order of 30 to 40 per cent.

From this we may assume that the combined load factor of a large number of house-cooling plants would also be somewhat better than that of a single plant.

Equipment and Energy Requirements

Equipment	Typical Electric Load	Watts Input	Power Factor	Estimated Operating Season Total Hours	Kwh. per Season
Automatic oil burner or furnace	1/4-hp. split phase motor. Also controls and ignition.	200	60%	Sept. 15—1,880 May 15	376
Automatic coal stoker	1/6-hp. split phase motor driving stoker mechanism and blower. Control devices.	250	65%	Sept. 15—1,880 May 15	470
Automatic gas furnace	The majority do not use forced draft. Hence electric energy is negligible.				
Air distribution system for heating with ducts	1/4-hp. split phase motor with controls.	300	70%	Sept. 15—1,880 May 15	564
Humidifier (motor-driven fan)	Motor. (Seldom economical to use electrical energy to furnish heat.)	50	50%	Oct. 1—2,160 Apr. 15	108
Cooling and air distributing system (a) 2 rooms (1.5 tons)	3 hp. total. Capacitor motor used to drive compressor.	3,000	90%	May 1—200 Sept. 15	600
(b) 8-room house of average construction (4 tons)	7 1/2 hp. total. Polyphase motor used to drive compressor.	7,000	80%	May 1—200 Sept. 15	1,400
Attic ventilating fan	1/10-hp. split phase motor.	150	55%	May 1—480 Sept. 15	72

Fig. 5—Requirements of home air-conditioning installation in Albany, N. Y.

Equipment	Typical Electric Load	Watts Input	Power Factor	Estimated Operating Season Total Hours	Kwh. per Season
Automatic oil burner or furnace	1/4-hp. split phase motor. Also controls and ignition.	200	60%	Sept. 15—1,425 May 1	285
Automatic coal stoker	1/6-hp. split phase motor driving stoker mechanism and blower. Control devices.	250	65%	Sept. 15—1,425 May 1	356
Automatic gas furnace	The majority do not use forced draft. Hence electric energy is negligible.				
Air distribution system for heating with ducts	1/4-hp. split phase motor with controls.	300	70%	Sept. 15—1,425 May 1	428
Humidifier (motor-driven fan)	Motor. (Seldom economical to use electrical energy for heating.)	50	50%	Oct. 15—2,520 Apr. 15	126
Cooling and air distributing system (a) 2 rooms (2 tons)	3 1/2 hp. total. Capacitor motor used to drive compressor.	3,500	90%	Apr. 15—335 Sept. 15	1,072
(b) 8-room house of average construction (4 tons)	9 hp. total. Polyphase motor used to drive compressor.	8,500	85%	Apr. 15—335 Sept. 15	2,840
Attic ventilating fan	1/4-hp. split phase motor.	200	60%	Apr. 15—750 Sept. 15	150

Fig. 6—Requirements of home air-conditioning installation in Washington.

Furthermore, the winter air-conditioning equipment (Fig. 5) involves a total energy use nearly as great as that of the summer air-conditioning plant, although its maximum demand is much lower. Hence, if the air-conditioning plant is considered as a whole, its yearly load factor is materially higher than it would at first appear to be.

Fig. 8 is a typical daily load-time chart of winter air-conditioning equipment in Albany, N. Y., and is based on the combined records of a number of installations. For comparison, a typical domestic load curve is shown.

The load imposed by winter air-conditioning equipment is fairly uniform throughout the day, except for a peak in the early morning. Hence, the installation of such equipment does not aggravate the problem of supplying on-peak load.

As regards summer air-conditioning equipment, Fig. 9 shows calculated load-time curves for a 4-ton house-cooling plant. These curves are only approximate, since their shape depends on assumed weather conditions, house construction, shielding features employed, and conditions of occupancy. A typical domestic load curve for summer is included.

Considering residential load only, the cooling load is partly on-peak, as regards the time of day at which it occurs. From the seasonal standpoint, however, it occurs during the time of light loads, both in domestic and commercial use.

The seasonal distribution of air-conditioning load is illustrated in Fig. 10, which represents graphically the monthly energy requirements of a domestic air-conditioning plant. This chart is based on the climate of Albany, N. Y., using the data tabulated

ment with sufficient storage capacity to permit shutting down during the period of greatest domestic load.

Since low temperatures are not used for comfort cooling, ice provides a suitable means of storage, and the

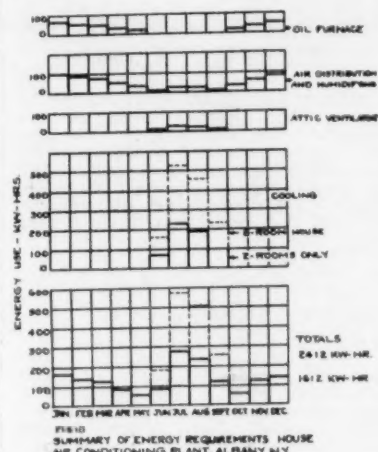


Fig. 5—Requirements of home air-conditioning installation in Albany, N. Y.

equipment can be designed to freeze ice during off-peak periods. Carrying the same idea further, the operating periods and the load factor may be increased by using equipment of small capacity and lower demand, with larger storage. During severe hot weather, almost continuous day-and-night operation might be attained.

However, for equipment of household and small commercial size, the addition of storage capacity involves an increase in first cost, in spite of the reduction in machine capacity.

Hence, it is unlikely that house-cooling equipments with storage capacity will be widely used until the incentive of considerably lower operating cost is offered for equipments which shut down during the peak hours.

Commercially manufactured ice has been used successfully in a number of small- and medium-capacity installations where the daily and the seasonal cooling requirements are of short duration. Low initial investment is the principal advantage, since the operating cost per day is relatively high.

Consideration must also be given to the space requirement, the daily attention required in refilling the ice bunkers, and the removal of sediment. The question of "demand charge" may also enter, since the ice requirement is large and variable.

As an alternative to the motor-driven compressor, the water-vapor and steam-ejector cooling system justifies

consideration in some cases. Given a modern automatic heating plant of the types mentioned above, steam at 12 to 15 lbs. per sq. in. pressure may be used as the energy source.

Where central-plant steam is accessible, the higher pressures available from this source permit a better thermal economy, which may largely offset the higher unit cost of central-plant steam.

The power required for auxiliary pumps and fans is relatively small, amounting to approximately 1/4 kw. for an equipment of 5-tons cooling capacity. Adding to this the power required by the heating equipment, the electrical input rate becomes approximately 1 kw.

The steam-ejector cooling system cannot be applied as generally as the compression system, since it demands steam under pressure and requires a large amount of condensing water as compared with a compression refrigerating machine.

But where these conditions can be met, a steam-ejector system of 5-tons capacity or larger may compare favorably, both in first cost and operating cost, with a vapor compression system of equal capacity.

Summary

The conclusions of this analysis are: 1. The use of automatic heating and winter air-conditioning equipment gives rise to an electrical load which is larger, per unit, than the domestic refrigerator load, and which in general, has desirable characteristics.

2. House-cooling equipment is available in several types, with varying electrical requirements. The size of equipment required can be reduced materially if suitable house-shielding equipment is used and if the requirements for air conditioning are considered in the design of new buildings.

3. The power demand of a complete house-cooling plant is large enough to warrant the installation of a separate polyphase power supply. A plant adequate for two rooms is generally within the limits of single-phase house distribution.

4. If the operating cycle of cooling equipment adds unduly to the existing peak of domestic load, it is possible to design the equipment for off-peak operation, provided savings in operating cost can be realized to offset the increased investment.

5. Without resorting to a cooling plant, a considerable improvement in summer comfort may be secured by the installation of ventilating fans, which involve a relatively small first cost and operating cost. For winter use, devices to humidify and circulate the air provide similar advantages.

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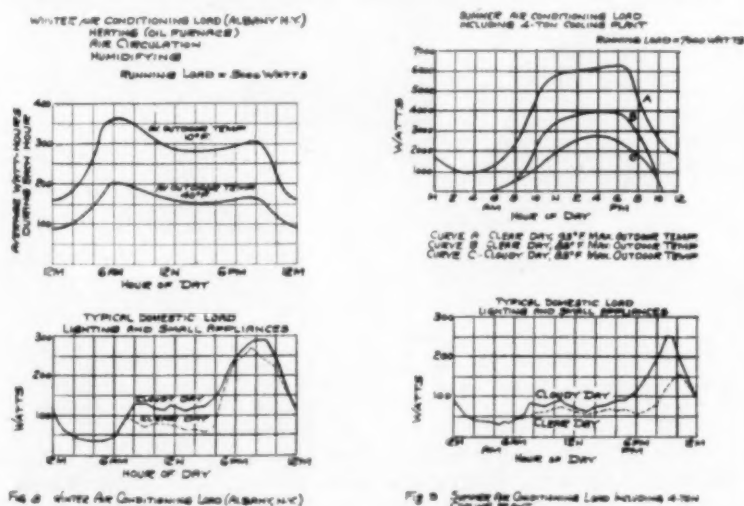
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able... and the alert, courteous
responsiveness of Fort Shelby's
service!

Next time drive direct to Hotel
Fort Shelby. Thoughtful attendants,
at either entrance, will relieve you
of your car and return it at your
command... a courtesy without
fee. Nominal garage tariffs. You'll
be delighted, too, with Hotel Fort
Shelby's location in the heart of
Detroit's shopping, theatre, finan-
cial and wholesale districts.

Hotel Fort Shelby is more than a
truly great hostelry. It embodies
veritably all the facilities and ac-
commodations to be found in the
downtown area of a metropol-
itan city: Barber Shop, Beauty
Parlor, Swedish Baths, Cigar Store
and Haberdashery, Drug Store,
Western Union Office and Flower
Shoppe. Each of its 900 rooms is
equipped with servitor, circulating
ice water and private bath. Radio
for every room. Music and dancing
every evening in the Main Dining
Room... no covert charge.
Fort Shelby rates are attractive not
merely because they are so reason-
able, but because they give so much
for so little... beginning at \$2.50.

**Hotel Fort
Shelby**

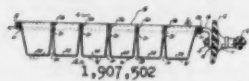
E. J. BRADWELL,
Managing Director
DETROIT

"AGLOW WITH FRIENDLINESS"

PATENTS

ISSUED MAY 9, 1933

1,907,502. FREEZING TRAY. Ralph H. Chilton, Dayton, Ohio, assignor to The Inland Mfg. Co., Dayton, Ohio, a Corporation of Delaware. Filed May 29, 1930. Serial No. 457,077. 4 Claims. (Cl. 62-108.5.)

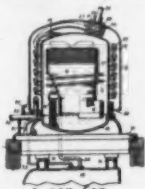


1. A freezing tray adapted to be in-
serted by hand within the freezing com-
partment of a domestic refrigerator com-
prising: a metal frame support and a one
piece molded flexible rubber container hav-
ing a marginal flange and groove therein,
said container being insertable within
said support and removably retained there-
in by a portion of said frame fitting with-
in said groove.

1,907,503. FREEZING TRAY. Ralph H. Chilton, Dayton, Ohio, assignor to The Inland Mfg. Co., Dayton, Ohio, a Corporation of Delaware. Filed May 29, 1930. Serial No. 457,078. 4 Claims. (Cl. 62-108.5.)

1. An ice freezing tray adapted to be in-
serted by hand in a freezing compartment
of a domestic refrigerator, comprising: a
molded flexible non-metallic container hav-
ing a series of relatively long ice pockets
in spaced relation except where said
pockets are joined at their upper portions
whereby to provide circulating air pas-
sages between said pockets, and a metal
carriage for said container having cross
members underlying said joined upper
portions of said pockets to support same
at these points.

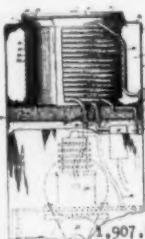
1,907,603. REFRIGERATING MACHINE.
Christian Steenstrup, Schenectady, N. Y.,
assignor to General Electric Co., a Corpora-
tion of New York. Filed Sept. 23, 1932.
Serial No. 634,542. 8 Claims. (Cl. 62-115.)



1. A refrigerating machine including a
compressor casing, means including a cool-
ing jacket having a liquid therein for
cooling said casing, means including a
conduit passing through the said cooling
jacket for condensing compressed refriger-
ant, and means including a cooling
water conduit passing through said cool-
ing jacket in heat exchanging relation to
said refrigerant condensing means for
cooling said condenser and said casing.

1,907,641. LIQUID COOLING APPARAT-
US. Joseph Askin, Buffalo, N. Y., as-
signor to Fedders Mfg. Co., Inc., Buffalo,
N. Y. Filed July 1, 1932. Serial No. 620,
450. 7 Claims. (Cl. 257-241.)

4. Apparatus for cooling and dispensing
liquid comprising a plurality of interest-
ed coils, one of said coils providing a



conduit for liquid to be dispensed and the
other of said coils providing a conduit for
fluid refrigerant, each of said coils being
formed from a length of tubing wrapped
into a helix, the convolutions of the coil
for liquid being disposed between the con-
volutions of the coil for refrigerant, the
convolutions of said refrigerant coil being
disposed on opposite sides of the convolu-
tions of the liquid coil, said convolutions
being in intimate thermal contact.

1,907,649. PROCESS OF QUICK-FREEZ-
ING. Carl Marx, Chicago, Ill., assignor
to Paul W. Petersen, Chicago, Ill. Filed
June 4, 1930. Serial No. 469,130. 7 Claims.
(Cl. 62-104.)

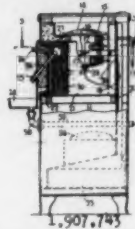
1. The process of freezing comestibles
which comprises wrapping the same and
passing the wrapped products through a
zone wherein they are subjected to heat-
abstraction by means of a liquid metallic
bath that does not wet the said wrapped
products.

1,907,680. DISPLAY COUNTER. Edward
M. Strass, Detroit, Mich., assignor to
Wallich Ice Machine Co., Detroit, Mich.,
a Corporation of Michigan. Filed Nov. 11,
1929. Serial No. 406,461. 6 Claims. (Cl.
62-89.5.)

1. In a counter for the display of goods
of a character requiring cooling, a display
section permanently open to permit an in-
troduction or removal of goods, means for
discharging cooled air into the display
section above the goods, a deflector tend-
ing to cause movement of the discharged
air downwardly towards the goods, means
whereby the said cooled air is caused to
move practically uniformly in and about
the goods, a conduit whereby the air pass-
ing about the goods is delivered to the
cooled air discharging means, and a cool-
ing element in said conduit.

1,907,743. WATER COOLER. William D.
Collins, Evansville, Ind., assignor to Ser-
vel, Inc., New York, N. Y., a Corporation
of Delaware. Filed Feb. 7, 1931. Serial
No. 514,132. 14 Claims. (Cl. 62-141.)

1. A water cooler comprising a cabinet, a
liquid container within said cabinet, a
flexible discharge pipe for said liquid con-



tainer means for refrigerating said liquid
container, a storage compartment in said
cabinet constructed to be cooled by said
container, and a closure panel carrying
the discharge pipe for said container and
affording access to said storage compart-
ment.

1,907,885. REFRIGERATION SYSTEM
AND METHOD. John J. Shively, Brook-
ville, Pa. Filed June 7, 1927. Serial No.
197,147. 21 Claims. (Cl. 62-115.)

1. A refrigerating system including a
compressor, a condenser, a receiver for a
volume of refrigerant delivered by the
compressor, a check valve between the
compressor and the receiver, one or more
cooler units arranged to receive refrigerant
from the receiver, an accumulator in-
to which the cooler units exhaust, a valve
between each cooler unit and the accumu-
lator adapted to be set to open at
any determinate pressure and correspond-
ing temperature in its cooler unit, a con-
nection between the accumulator and the
suction inlet of the compressor, a liquid
pump for delivering liquid refrigerant
from the accumulator into the cooler line,
and an automatic by-pass valve respon-
sive to pressure in the cooler line for de-
livering excess refrigerant back to the
accumulator.

1,908,248. REFRIGERATING APPARAT-
US. Harry B. Hull, Dayton, Ohio, as-
signor by mesne assignments, to Frigidaire
Corp., a Corporation of Delaware. Filed
Dec. 22, 1927. Serial No. 241,858. Re-
newed Sept. 13, 1932. 22 Claims. (Cl.
62-1.)

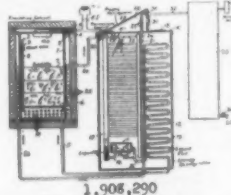
1. A refrigerator having an insulating
wall provided with breathing means
adapted to inhale from within the refrig-
erator and to exhale outside the refrig-
erator by reason of periodic changes in
the temperature of said wall and having
a cooling element containing refrigerant
and permitting said wall to inhale and to
exhale independently of the flow of said
refrigerant.

1,908,277. ABSORPTION MACHINE.
Edmund Altenkirch, Neuenhagen near Ber-
lin, Germany, assignor, by mesne assign-
ments, to The Hoover Co., North Canton,
Ohio, a Corporation of Ohio. Filed July
23, 1930. Serial No. 469,985, and in Ger-
many July 25, 1929. 7 Claims. (Cl. 62-119.5.)

1. In an absorption machine for con-
tinuous operation a vessel containing an
absorption solution, an operating medium
and a neutral gas and having means for
evaporating said operating medium at one
vessel portion in the presence of a neutral
gas, and means for absorbing said vapor
at another vessel portion from said neutral
gas into said absorption solution, means
for forming a rising vapor path between
said points permitting the diffusion
of the vapor through said neutral gas
from the evaporation to the absorp-
tion point, said points being located with
respect to the vessel so that a stagnant
layer of neutral gas remains in said ris-
ing path.

1,908,290. REFRIGERATING SYSTEM
AND METHOD. Justus C. Goemann, Chi-
cago, Ill. Filed Oct. 13, 1930. Serial No.
485,202. 20 Claims. (Cl. 62-91.5.)

1. In a refrigerating apparatus, the com-
bination comprising two refrigerators, re-
frigerating coils in said refrigerators, and

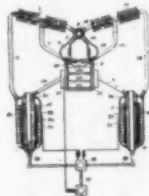


means connected to said coils for receiv-
ing solid carbon dioxide from which
liquid carbon dioxide refrigerant is de-
livered to the coils of said refrigerators.

1,908,323. ICE CUBE PAN STRUCTURE.
Edwin P. Corbett, Columbus, Ohio, as-
signor of one-fourth to William D. Bell,
Columbus, Ohio. Filed Oct. 8, 1928. Serial
No. 311,109. 8 Claims. (Cl. 62-108.5.)

1. An ice cube tray comprising a plural-
ity of cells, connecting portions between
said cells, said connecting portions hav-
ing openings therein and the walls of said
cells being exteriorly spaced apart and a
skirt for said tray.

1,908,413. ABSORPTION REFRIGERAT-
ING APPARATUS. Thore Martin Eltvig,
Stockholm, Sweden. Filed Jan. 28,



1932. Serial No. 589,479, and in Germany
Feb. 7, 1931. 5 Claims. (Cl. 62-118.)

1. In a combination, two intermittent ab-
sorption refrigerating systems, each com-
prising a boiler-absorber, a condenser, and
an evaporator, each boiler-absorber hav-
ing a fluid collector, and a communication be-
tween each fluid collector and the con-
denser of the other system.

1,908,573. DEFROSTING MECHANICAL
REFRIGERATORS AND THE LIKE.
Nathan Sulzberger, New York, N. Y.
Filed Sept. 24, 1931. Serial No. 564,954. 12
Claims. (Cl. 62-95.)

3. A method of defrosting a mechani-
cal refrigerator having a food compart-
ment and refrigerating mechanism includ-
ing a chilling unit having a chamber in
which water may be frozen, which com-
prises warming the surface of said chill-
ing unit on which frost accumulates while
maintaining water in said water-freezing
chamber frozen.

REISSUE

18,826. REFRIGERATING APPARATUS.
Elihu Thomson, Swampscott, Mass., as-
signor of one-third to John A. McManus,
Lynn, Mass., and one-third to James E.
Graham, Newtonville, Mass. Original No.
1,568,102, dated Jan. 5, 1926, Serial No.
554,377, filed July 28, 1923. Application for
reissue filed Oct. 17, 1932. Serial No.
638,265. 8 Claims. (Cl. 62-178.)

7. In a refrigerator a compressor for
compressing liquid refrigerant, a closed
storage tank for frozen liquid, an evapo-
rator containing liquefied volatile refriger-
ant in close thermal relation to said
tank, said evaporator having radiating
heat conducting extensions proportioned
relatively to the tank capacity to permit
a thickness of ice due to evaporation of
liquefied refrigerant to form and to re-
tard evaporation of refrigerant at prede-
termined low pressure during a desired
period of rest from compression while the
compressor is stopped.

INLAND SUING McCORD ON ICE CUBE TRAYS

DETROIT—Alleging infringement
of letters patent 1,407,614 on a flexible
ice cube tray, Copeman Laboratories
Co. and Inland Mfg. Co. have filed suit
against McCord Radiator & Mfg. Co. in
the U. S. District Court, eastern dis-
trict of Michigan, southern division, in
equity No. 5836.

Patent in question was applied for
by Maurice A. Wicks on Sept. 23, 1920,
rights subsequently assigned to Kel-
vinator Corp., then to Copeman Labo-
ratories, and manufacturing rights
acquired by Inland Mfg. Co. The pa-
tent was granted on Feb. 21, 1922.

COLLEGE BUYS UNIT

KANSAS CITY, Mo.—Columbian
Electrical Co., Westinghouse distribu-
tor here, recently sold an AP-90 to
the Junior College.

HELLMUND IS NAMED CHIEF WESTINGHOUSE ENGINEER

EAST PITTSBURGH, Pa.—R. E.
Hellmund has been appointed chief
engineer of the Westinghouse Electric
& Mfg. Co., according to announce-
ment made by Dr. S. M. Kintner, vice
president in charge of engineering.
Mr. Hellmund is the first Westing-
house executive to hold this office
since the death of B. G. Lamme in
1924.

The new chief engineer joined the
Westinghouse company in 1907 first
working in the general engineering
department.

In 1917, Westinghouse officials gave
him miscellaneous consulting duties in
which he continued until 1921 when
he was appointed engineering super-
visor of development. In 1926 he was
made chief electrical engineer, which
position he has held until his present
appointment.

DR. SHARP RETIRES AS E.T.L. EXECUTIVE

NEW YORK CITY—Retiring after
a service record of 32 years, Dr. Clay-
ton H. Sharp, vice president and tech-
nical adviser of Electrical Testing
Laboratories, plans to enter the con-
sulting engineering field.

Since 1901, when he entered the em-
ploy of the company, Dr. Sharp has
been chiefly active as a testing direc-
tor.

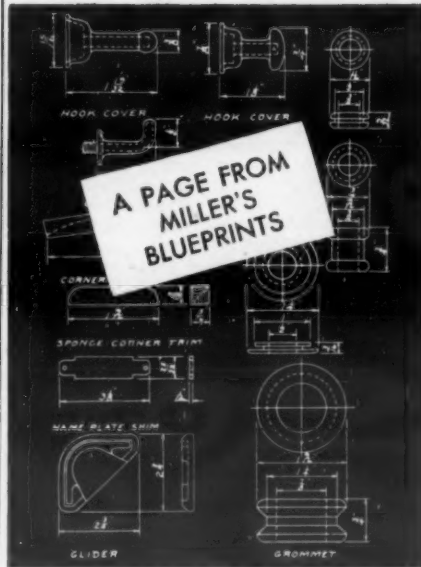
ANSUL a dependable SULPHUR DIOXIDE

Dependability is a quality that
is paramount in Ansul Sulphur
Dioxide. There is a guaranteed
analysis on every cylinder that
leaves our plant for refrigeration
work.

ANSUL CHEMICAL CO.
MARINETTE -- WISCONSIN



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MILLER RUBBER PRODUCTS CO., Inc., AKRON, OHIO

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SINCE this electrical refrigeration in-
dustry was in the blueprint stage
Miller has tackled and solved its rubber
problems.

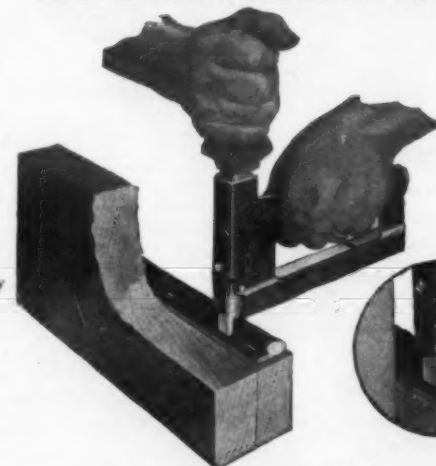
Filling exacting requirements is our
daily routine. A technical staff experi-
enced in refrigeration divides among its
members responsibility for rubber ac-
cessories of practically every leading make
of refrigerator. It observes scrupulous
professional respect for confidential data.

Dorsal compounds which eliminate
odor, avoid checking and cracking, re-
tain their "spring" and reduce the de-
teriorating action of butter, grease and
mayonnaise to a minimum—these are
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Our standard blueprints cannot fail to
interest and help the production engi-
neer. This specialized service is yours for
the asking. Just write—

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can
also
be
used
in
many
places
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Every
Service
and
Repair
Man
Price
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Shipped
on
10
days
approval

Staples—Put up 5000 to a package

176 "B" Steel Per Pkg. \$2.75	176 "BTC" Copper, tin plated Per Pkg. \$3.25
176 "BC" Copper " " 3.75	176 "B" Monel " " 5.50

Price on Staples in quantity on application

R.N.E. Markwell Mfg. Co. Inc. 200 Hudson St. New York
IF IT IS A STAPLING PROBLEM; WE CAN HELP YOU SOLVE IT.

A NEW FIN COIL by PEERLESS

Wedge-locked and edge-locked aluminum fins on tinned copper tubing for methyl chloride, sulphur dioxide, F-12, etc.—aluminum tubing for ammonia. Absolute Metal to Metal Contact. A Superior Coil in which Soldered Return Bends have been eliminated. Priced to meet 1933 conditions. Write—Wire for Catalog.

PEERLESS ICE MACHINE CO., 515 W. 35th St., Chicago, Ill.

"REMPE" SUPER COLD FIN COILS

for
Methyl Chloride,
Ammonia, F-12 and
Sulphur Dioxide

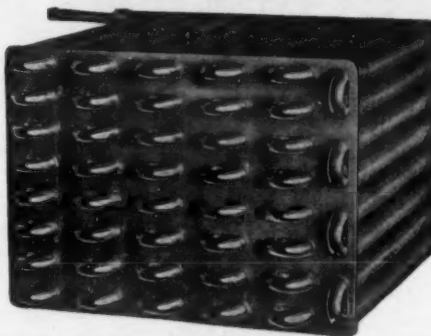
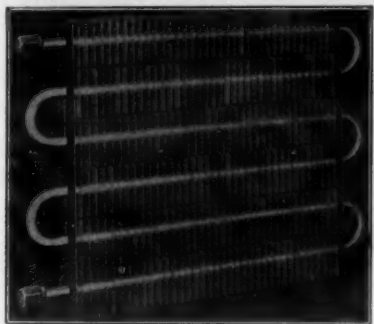
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CHICAGO KEDZIE 0483 ILL.

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Highest Efficiency
With Smallest Number
of Joints

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Makers of Rome Condensers and
Helical Finned Tubing



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Save money, time and work—Buy everything from
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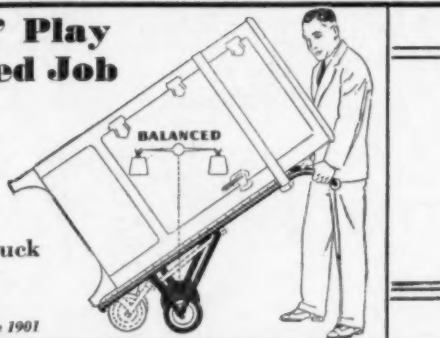
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1135 CALLOWHILL ST. PHILADELPHIA 116 BROAD ST. NEW YORK STATLER BLDG. BOSTON

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For all makes and types of refrigerators. There is a stock near you. Ask for price list and name of your nearest distributor.

THE DAYTON RUBBER MFG. CO.
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The World's Largest Manufacturer of V-Belts

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PUBLICATIONS	NUMBER	UNITED STATES*	CANADA†	ALL OTHER COUNTRIES
Electric Refrigeration News	1 subscription	\$3.00	\$6.00	\$5.00
	5 or more, each...	2.75	5.75	4.75
	10 or more, each...	2.50	5.50	4.50
	20 or more, each...	2.25	5.25	4.25
Refrigerated Food News	1 subscription	\$1.00	\$2.00	\$2.00
	5 or more, each...	.95	1.95	1.95
	10 or more, each...	.90	1.90	1.90
	20 or more, each...	.85	1.85	1.85
BOTH PAPERS	1 subscription	\$3.50	\$7.00	\$6.00
	5 or more, each...	3.25	6.75	5.75
	10 or more, each...	3.00	6.50	5.50
	20 or more, each...	2.75	6.25	5.25

*U. S. and Possessions and Pan-American Postal Union Countries.

†High rates for Canada are due to Canadian tariff of 50 per cent.

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Name

Address

City State

QUESTIONS

Vegetable Freshener Pans

No. 1206 (Dealer, Illinois)—"Please refer us to a company which can furnish a vegetable freshener pan not over four inches in height, suitable for the new Standard 63 Frigidaire."

Answer—Federal Enameling & Stamping Co., Pittsburgh, Pa.

Beer-Dispensing Equipment

No. 1207 (Manufacturer, Illinois)—"Please send us full information on all types of beer-dispensing equipment."

Answer—See the May issue of REFRIGERATED FOOD NEWS which featured detailed information on 41 makes of beer dispensers. Much additional information on this subject will appear in the June issue.

Packaged Ice Cream Mix Preparations

No. 1208 (Engineer, Massachusetts)—"Will you kindly supply me with the names of manufacturers of powdered or canned ice cream mix put up for domestic use. I understand that there are a number of these preparations which can be used by simply adding water or milk, and freezing in ice cube trays."

Answer—Try Duval's Food Products Co., 489 Fifth Ave., New York, N. Y.

List of Refrigerator Manufacturers

No. 1209 (Publisher, New York)—"We are seeking a list of manufacturers of automatic refrigeration equipment. The American Society of Refrigerating Engineers referred us to you as a publisher of directories on this subject. Will you please let us know whether you have this information available, and how a copy of your directory can be obtained."

Answer—The REFRIGERATION DIRECTORY AND MARKET DATA BOOK lists all makers of parts, materials, supplies, and complete refrigeration systems. Cost of the book, with October (1932) Supplement, paper cover, is \$1 per copy.

Door Latch with Lock

No. 1210 (Distributor, Ohio)—"We have had several calls recently for a lock for household refrigerator doors. Will you kindly advise whether or not there is such an item on the market, and if so who manufactures it."

Answer—Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich., makes such a latch for Gibson Electric Refrigerator Corp.

Ebullition of Refrigerants

No. 1211 (Engineer, Nebraska)—"One of your issues carried an item to the effect that someone had discovered that if bamboo is submerged in the refrigerant of an evaporator, the ebullition action is increased. Can you tell me what use of this is contemplated, and where a report of this observation can be obtained."

"If a catalyst in the form of a cellulose has been found that will result in more rapid heat absorption and higher gas pressures for a given temperature, I am very much interested in getting full details."

Answer—The accelerated action of refrigerant ebullition in flooded evaporators due to presence of a bamboo strip was described by Dr. L. A. Philipp of Kelvinator Corp. before the December convention of the American Society of Refrigerating Engineers. For a report of Dr. Philipp's talk see the Dec. 14 issue of ELECTRIC REFRIGERATION NEWS, or the March issue of Refrigerating Engineering.

Refrigerator Parts for Export

No. 1212 (Exporter, New York)—"One of foreign clients is interested in receiving catalogs and other literature on the different types of thermostats, expansion valves, coils, valves, etc., for refrigeration. If you will give us names of companies manufacturing such products, we shall feel obliged."

Answer—See classifications of these parts by manufacturers in the REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Carrene

No. 1213 (Engineer, Pennsylvania)—"Will you kindly advise whether Carrene, the Grunow refrigerant, is available to other manufacturers, and if so who supplies it."

Answer—Grunow Corp. has an exclusive right to the use of Carrene in household refrigerators, purchasing it from Carrier Engineering Corp. which employs that refrigerant in large air-conditioning equipment.

Odd-Current Operation

No. 1214 (Manufacturer, Illinois)—"Can you give us any information about the general practice among the more prominent manufacturers of electric refrigerators regarding additional charges, if any, for 25-cycle or direct-current refrigerators?"

Answer—Practically all refrigerator manufacturers will make provision for

operation of their machines on odd-frequency or direct-current power lines.

Makers of refrigerators with "open" systems simply supply a special motor, with little or no extra charge. Some hermetic machines are built for odd-frequency alternating current, and all can be operated on direct current by using a converter which ranges in cost from \$15 to \$35.

A.S.R.E. Address

No. 1215 (Engineer, Oklahoma)—"Will you please give me the address of headquarters for the American Society of Refrigerating Engineers?"

Answer—37 W. 39th St., New York, N. Y.

Commercial Machine Capacities

No. 1216 (Engineer, Canada)—"Would you be good enough to advise me where to obtain specifications covering the IME, A.S.M.E. and A.S.R.E. ratings for small refrigerating machines of one ton and less. We would also like to know which of these ratings is most commonly used for small commercial jobs."

Answer—IME is an abbreviation for the expression "ice melting effect" which is used to indicate the refrigeration capacity of a machine by comparing it with the refrigeration effect of melting ice. For small machines, IME is usually expressed in pounds of ice melting effect, whereas for large machines it is frequently given in tons of ice melting effect.

A.S.M.E. and A.S.R.E. are abbreviations for the American Society of Mechanical Engineers, and the American Society of Refrigerating Engineers, respectively. The latter has established a set of standard conditions under which the capacity of a machine can be determined in terms of IME. The A.S.R.E. rating conditions are regarded as standard by the refrigeration industry.

The A.S.R.E. standard ton of refrigeration is measured with the machine operating at a suction pressure which corresponds to a saturation temperature of 5° F. for the refrigerant used, with a discharge pressure which corresponds to a saturation temperature of 80° F. for that refrigerant, and 9° of superheat.

For IME capacities of commercial refrigerating machines in the 1-ton range expressed according to A.S.R.E. standard conditions, see the tabulation of specifications in the April issue of REFRIGERATED FOOD NEWS.

General Sales Managers

No. 1217 (Manufacturer, New York)—"We would like to get in touch with the general sales managers of manufacturers of mechanical refrigerators, and would very much appreciate any assistance you can give us along this line—that is, names and addresses."

Answer—The REFRIGERATION DIRECTORY AND MARKET DATA BOOK lists all refrigerator manufacturers, together with addresses and names of important executives.

FINANCIAL STATEMENTS

Crosley Radio Corp.

NEW YORK CITY—Crosley Radio Corp. last week reported a net loss of \$291,061 for the fiscal year ended March 31, 1933, as compared with a loss of \$139,091 in the previous year. Total sales for the year were \$5,277,686, a drop-off from the total of \$6,702,432 registered for the preceding year. Current assets this year as of March 31 were reported to be \$2,163,132, with current liabilities listed as \$310,906.

Cash, securities, and accrued interest showed a decrease on March 31 of \$460,883 during the past year, making the present total \$1,007,751.

Liquid Carbonic Corp.

NEW YORK CITY—Dropping from a net income of \$896,099 earned during the previous 12 months, Liquid Carbonic Corp. last week reported a net loss of \$682,286 for the fiscal year ended March 31, 1933.

Before depreciation and taxes, the company's loss was entered as \$78,271, compared with the preceding year's profit of \$1,674,070. Total net sales amounted to \$6,001,487 for the year, with \$8,756,814 as last year's figure.

RADIO AND REFRIGERATION SHOW IN LOS ANGELES

LOS ANGELES—A combination radio and refrigeration exposition, in which 20 makes of refrigerators and radios were displayed by local distributors, brought interested crowds to the Shrine Auditorium here May 15, 16, and 17.

NEW FOUNTAIN MAKER

BRONX, N. Y.—Newly organized to manufacture soda fountain equipment and fixtures, American Brass Fountain Equipment Co. has opened offices at 1710 Montgomery Ave. here. Irving Huppert is founder of the concern.

CLASSIFIED

PAYMENT in advance is required for advertising in this column.

RATES: 50 words or less, 1 time, \$2.00, extra words 4 cents each. Three times, \$5.00, extra words 10 cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccahee Bldg., Detroit, Mich.

POSITIONS AVAILABLE

MANUFACTURER'S SALES REPRESENTATIVE wanted for each of a number of territories both domestic and foreign. Prefer men or organizations fully experienced in refrigeration with following among ice cream manufacturers. Line comprises ice cream cabinets and cabinet replacement parts, condensers, coils, water coolers, beer coolers, etc. Write fully in first letter giving background and some indication of responsibility. Address "Manufacturer," Brown's Advertising Agency, 1539 East New York Ave., Brooklyn, N. Y.

MEN WANTED. I have taken over the Western Distribution of an Eastern Manufacturer of Cellulose products sold to the Automobile trade and have an interesting Distributor proposition to make to individual specialty men from Pennsylvania West. Will be especially interested in hearing from men of Supervisor type whom I have contacted in past years. V. E. (Sam) Vining, Room 524 Rowlands Bldg., Columbus, Ohio.

POSITIONS WANTED

REFRIGERATOR MECHANIC desires position in or near Chicago. Employed in New York at present by refrigerator distributors. Experienced and references. Box 565.

INDEPENDENT SERVICE COMPANIES

MANUFACTURERS are constantly inquiring for reliable local service organizations prepared to handle installation and maintenance work in communities not served by their regular distributors and dealers. Your business card in this column will bring this profitable business direct to you. Special low rates are now offered to independent service men. For only \$10.00 you may carry a 4-line advertisement for three months. Ask for details. Address Electric Refrigeration News.

Testing Laboratory

For refrigerators
and refrigerating equipment
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